W. J. Reynolds.

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CONTENTS OF NOVEMBER NUMBER.

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VOL. X. NOVEMBER, 1859. NO. 11.

R. M. STOKES, PROPRIETOR. COLUMBIA, S. C. NEW SERIES VOL. 1, NO. 11.

For the Farmer and Planter.

EMBANKMENT OF RICE LAND.

MR. EDITOR:—In continuation of our remarks upon the embankment and cultivation of rice lands, we would say, that the bank being made sufficiently high to keep out the tide, and the trunk in its bed, it is time for us to mark out the location of the river-ditch, so called from its being the ditch nearest to the river. At the distance of 30 feet from the bank, stakes are to be placed and continued around the field, and the space contained between these stakes and the base of the bank is known as the inner river margin; and from the inside of this margin towards the field the river-ditch is to be cut, of certain width and depth, but what this "width and depth" should be, is a point by no means settled.—In this, as in other cases, we must be governed by circumstances. It is certainly very desirable to dry a field rapidly *which is to* be dried, and hence it would follow that the larger the ditch the better our work would be done. But a column of water of the size of the trunk, is all that can escape at one time, and if the trunk is unwieldy and too large, it is difficult to manage; and if we cut our ditch large (say 8 feet), and the trunk put down is only 4 feet, then we have wasted land, and unnecessarily expended our labor. With these facts before us, *we*, (in our section of the country,) have concluded that in a square of 20 acres, a ditch 4 feet wide and 4 feet deep, leading to a trunk 4½ feet wide, affords sufficient outlet to all the water that comes down to it, and we lay it out and build our trunks accordingly, seldom varying more than a few inches from these dimensions. The ditch is to be sloped as we go down, so that the bottom will be only 2 feet wide, and this sloping is of some importance, as it prevents caving, and perhaps has other advantages.—Each man will cut 600 cubic feet and throw it out, as his day's work, and the task of the width and depth designated will be 50 feet in length. The earth thrown out, except the top sod, is placed on the bank, which, with this addition, is put entirely out of "harm's way," even in the highest spring-tides. The sods remaining as well those from the base of the bank are now used to fill up the creeks, taking care not to close the ends which open into the river ditch. New land is so high, and drains so well, especially when the soil is porous, that this ditch, for a year or two, would prove an almost sufficient drain of itself; but the eye must be gratified in looking at a field as well as a picture; and a planter would be considered as careless and slovenly, to say nothing worse, who failed to cut drains in a rice field, even if his crops were satisfactory. The distance at which these drains are to be placed from each other, and their width and depth, has been much dwelt upon. To me it seems that the question may fairly be settled by the nature of the soil; in stiff, rigid land, which drains only from the surface, the drains ought to be small, shallow, and near together; but in the light and porous lands, the ditches, or rather drains, ought to be deep, and far apart. Our habit has been (and we still think it a good one) to locate a drain in each half acre, (150 feet each way*), taking care to place them on the outside of the line; so that the space between the drains will really measure what they are supposed to do—a full half acre. Two feet is the width of the ditch, and 2½ the depth usually adopted, though it is not fixed: some adding to the width, and some

* This is considered and worked as a half acre where we reside.

to the depth; but the former is sufficient to put the land in the highest possible tilth. These ditches are to be laid out with stakes; the same proportional slope being observed, a man will throw out 600 cubic feet, and his task will be 150 feet in length; no obstructions of any kind are to be left in these drains; the water passing through them must have free and uninterrupted course to the trunk. Our heaviest labor is now accomplished; the bank is made, the ditch and drains are cut, the logs are piled up, the marsh or rush is cut down close to the ground, and quite dry, and it is time to think of our reward—the seed is to go into the ground. As preparatory, we must select a clear, bright day in March, with a good wind blowing, and fire is to be placed around the field in such a manner, that it will sweep over it with rapidity, and entirely burn up all that comes in its way. The top of the land, after the fire has passed over, will show nothing but a carpet-like appearance, but below the surface is a mass of marsh and rush roots, hard and firm, and possessing all of their adhesive properties to such an extent that it would seem impossible to plant your rice in their midst, with any prospect of success. To remedy this difficulty two modes have been suggested, differing widely from each other. First, it has been proposed to turn up the land, and thus endeavor to destroy the roots of marsh or rush, and the second is to allow the roots to remain, trench through them, and trust to the free use of water to bring up the crop. To the first plan the objections are very great; the labor of turning is quite appalling, and if accomplished, its utility is very doubtful. We have seen 12 men fail to turn up a half acre in a day, and few plantations could afford to go through a large field at this rate, and in the field alluded to it was found that the roots turned up afforded no covering for the rice; they floated when water was put on, and left the rice entirely bare. After observing these difficulties, and having some experience, I have preferred trenching through the land, as it is found after burning, and repeat the trenching until you have a sufficient drill opened to receive the rice, and after claying the seed to put it in and cover it up as much as possible. It is very difficult to get a stand in new land, such as I have been describing, but perseverance will be rewarded by success, although it is certain that the rice will be imperfectly concealed, for want of earth. A portion of it will float off, some is exposed to the ravages of birds, and many grains which sprout, will die, in consequence of their roots being on the surface, and exposed to the sun. It will be asked why not plant in an open trench, and avoid all these difficulties? The answer is, that new lands are quite high, and unless you have a succession of high tides you may be found with your rice planted and quite dry, without water to cover it; this *has* occurred, and will occur again. The crop in new land should be planted quite thick to meet all of these difficulties, (say $2\frac{1}{2}$ or even 3 bushels to the acre), and the water should be let on, very slowly; a small portion of the trunk door should be opened, and not one or two tides, but many will be requisite to flow it, and if this is not attended to, you will find much seed washed out of the trench, and scattered over the surface of the land. The water once on must be kept perfectly still, and remain until the rice is well sprouted, and then be allowed to leak off rather than run off. If after a reasonable time (10 or 12 days) the fields become dry, and the stand is not satisfactory, we must again resort to water, and continue its occasional but short use until the field looks green. The rice being up so that we can see it in the rows through the field, in early morning or evening, it is in what we call the "point or needle state," and some experience is necessary to enable us to take the next step advantageously. But as the infant must creep before it walks, so the young planter must take his first lesson, and cannot expect to be perfect at the onset. The water must now go on, and is spoken of as "point water;" (because it is used when the rice is sharp pointed or needle shaped, and before it has forked or expanded its leaf;) it must be raised 5 or 6 inches higher than the rice, and is to be kept on at this height for 4 or 6 days, and then gradually lowered until you can see the rice through the rows, standing or more commonly laying upon the water. A mark is now made upon some stationary object, as the upright of the trunk, noting the depth of the water, and enabling you to keep it at this height, which is a matter of some importance, and to accomplish this requires no little watchfulness on the part of the master or overseer, and I might say of both. If it leaks off much, the rice in the high places will scald, and the grass will grow rapidly, and if it becomes too full the rice in the low places is stretched and consequently becomes feeble and sickly, and makes no progress. The value of good banks and tight trunks are now fully appreciated. We are now to be lookers-on, and wait patiently until the plant becomes strong, stands erect, and manifests a returning health; and this will not take place in less than 20 days from the time the field was flowed and often requires 10 days more. At this period you will find (in land which has been well cultivated) that the grass has disappeared, and the field is more clean

than any work could have made it; indeed, it is often literally (if the land flows well) without a spear of grass in it, while the rice exhibits a robustitude which gladdens the heart of the cultivator.—The water must now go off gradually—an inch or two every tide, until it reaches the surface of the land, and then the doors of the trunk ought to be raised, and the water pass off with a rush, so as to wash out the ditches and carry off the scum and filth which has accumulated in them. As soon as the land is quite dry, (we speak of land which has been previously cultivated), even if clean, we go in to it with the hoe and turn it up deep, freely loosening the soil, and preparing it to receive the new roots that will presently shoot out. If the rice has been planted about the 15th or 20th of March, the field is now kept dry for 50 or 60 days, (rice planted later has less dry growth), and we break up the sods turned up by the hoe, and the land is in the highest tilth. About this time if we examine carefully we shall find the plant forming a joint preparatory to earing out, and the crop is made, so far as we are concerned; we can do no more, and any attempt at work results, as all officiousness does, in doing mischief. The improvement of rice during this dry growth is very great; the stalk becomes large, the leaf expands and becomes broad, the rows become closed up, and the earth cannot be seen, and the field presents a beautiful surface of green foliage.—The first or lower joint having made its appearance (and in rice planted in March this usually happens from the 25th of June to the 1st of July,) water is to be put on deep for three or four days, but not sufficiently so as to *cover* up the rice, but to flow all of the high places, and at the expiration of this time lower the water until all of the leaves are entirely out and above it. Have a mark so as to keep the water level; do not raise it as the rice grows; let it remain in *statu quo*, excepting to change it every ten days, but always bringing it back to the same mark or guage. These directions being followed will entitle you to a clear and full crop, and as we rarely get less than we deserve, but oftentimes more, you will seldom be disappointed. In reference to this last water it is only fair for me to say that many very good planters delay it until the whole field is in joint, and some keep it dry until the second joint is to be seen, and thus allow all of the tillers to grow. With all respect for these opinions, my experience teaches me that the plant ought to joint as much as possible in water, which is its natural element. This is the period at which it is making its great effort, and requires the most nutriment, and water supplies the food upon which it delights to glut and satiate its appetite. The rice soon shoots out and the blossom follows, and in about 55 or 60 days from that in which the water was put on, rich luxuriant ears are hanging in thick clusters over the bending stalk, presenting the appearance of a field of waving gold. The grains begin to harden at the top and go downward, and when you have not more than an inch of green rice, it is time to dry the field and put the reapers in.—From the time at which we put the seed into the ground to the day we cut it, usually carries us through 160 days; a warm Spring and a hot Summer, with shallow flowing, will lessen the time, and a cold Spring and cool Summer will increase it; but take one season with another, and the March rice will require the time specified to mature it.—How long the field is to be dry before you cut the rice? may be asked. The land is generally dry in three or four days, if the doors are kept open, and the moss removed from the large ditches, and when we have firm land on which to stand, the rice ought to be cut. The rule for cutting is to follow the water mark on the stalk of the rice, left there by the water—and the rule is a good one, unless the growth has been remarkable, and then you must go above the mark. The importance of observing this rule may not be apparent to the beginner, but one accustomed to rice culture will require no explanation. The reason of our using the water mark as a guide is, that, generally speaking, if you cut above it the rice is too short to tie and be stacked with advantage, and if you go below it, you add to your labor by carrying out an unnecessary quantity of straw, and leave so little stubble that it burns badly, and this adds very much to your labor in the spring. After the rice is cut down and laid on the stubble, it should remain there for 36 hours, with a bright sun on it, so as to insure its being dry before it is put in sheaves and stacks. In cutting rice, the task on the first day is for all the full hands to cut an acre and lay it on the stubble; inferior hands do less, as in other work, proportioned to their ability. On the next day but one, (this intermediate day is allowed for the drying of the rice,) we start early and cut a quarter in the adjoining field, while the dew is upon it, but so soon as the sun is up sufficiently to dry what was first cut, we tie up a quarter and carry it out, or tie up a half-acre and stack it up, as the case may be. It is well for us to say that the cutting an acre to the hand depends upon the productiveness of the field; it is done very conveniently on a field making 50 bushels, but could not be done on the same land making 80 bushels to the acre. But to return to our subject—if the stack-yard is conve-

nient to the field, we can, each day after this, cut down a quarter, tie up a quarter, and carry out a quarter; but if the yard is distant, so much cannot be accomplished. In harvesting the rice crop, every facility should be given to the laborers. Flats and carts should always be used where it is practicable to do so; no crop is moved with so much difficulty; the carrying it on the head day after day, from morning until night, makes terrible inroad upon the negro, unless he is sustained, more than under ordinary circumstances; the support should be moral and physical. As little compulsion as possible ought to be used at this time; encouragement should be given in all ways; the food should be increased—the meat portion largely; kindness should take the place of very rigid discipline; and you will find that much work will be done, while your people are cheerful and happy. I have, Mr. Editor, planted many crops, and by pursuing the mode of culture suggested, have seldom failed to make a saving crop, and sometimes a large one, and by adopting the means last proposed, (increase of food and encouragement,) have it in the barn-yard in safety, within a very reasonable period.

I fear I have trespassed too much on your time and journal, and will therefore cease, asking you to excuse my lengthened statement, and assuring you that I have endeavored to condense my observations as much as possible, taking care to avoid obscurity.

Very respectfully,

A. B. C.

For the Farmer and Planter.

DO THE SUPER-PHOSPHATE MANURES CONTAIN ARSENIC?

Will Growing Plants absorb Arsenic without injury to vegetation? Are such plants proper food for Animals?

By "Hygeia."

In view of the fact that the super-phosphates are now largely manufactured as artificial manures, the true answers to the above questions are of great importance to our intelligent Planters. Edmund William Davy, Professor of Agriculture and Agricultural Chemistry, to the Royal Dublin Society, has recently undertaken a series of experiments, relating to the above-mentioned points, and leading to such important results, that I deem it appropriate that they should be submitted to the serious consideration of those who employ the artificial manures. I shall, therefore, endeavor to present a *brief abstract* of the Paper which Prof. Davy communicated to the "Royal Dublin Society," on the 29th of April 1859.

It is well known that there are two sources from which commercial sulphuric acid, or oil of vitriol is manufactured, namely, from *native sulphur*, and from *iron pyrites*—a compound of sulphur and iron. It is, likewise, an established fact, that the iron pyrites contains almost invariably more or less arsenic, which passes into the oil of vitriol manufactured from this source; whereas, the sulphuric acid made from native sulphur (which contains little or no arsenic,) is not so liable to be contaminated with that poisonous substance. Prof. Davy informs us, that pyritic sulphuric acid, on account of its being *cheaper*, seems, in a great measure (at least in Dublin,) to have taken the place of that manufactured from native sulphur; and hence the presence of arsenic in so many substances, in the preparation of which that acid is directly or indirectly employed. The vitriol and manure manufacturers have been in the habit of making an inferior kind of pyritic sulphuric acid, which, owing to its dark color, is called *brown* sulphuric acid. This contains *a comparatively large proportion of arsenic*, and is chiefly used in making super-phosphate and other artificial manures. The manufacturer seems to think that the acid which is too impure to be used in the arts, is good enough for making manures and for other agricultural purposes. It will be seen, that the experiments of Prof. Davy show that this is a great mistake.

1. In answer to the *first question* contained in the heading of this article, Prof. Davy ascertained the proportion of arsenic present in the brown sulphuric acid, used by one of the Dublin manufacturers for the purpose of making super-phosphate and other manures. From 12 fluid ounces of the acid, he obtained an amount of metallic arsenic equivalent to about 12 grains of arsenious acid, or *one grain* to each fluid ounce—the ounce of acid weighing about 800 grains, the arsenious acid would be 1-800th part of the weight of the acid, which would be equivalent to about $2\frac{1}{8}$ lbs., or nearly 3 lbs. weight in the ton of sulphuric acid. Prof. Davy thinks it probable that the generality of brown sulphuric employed contains *much more arsenic* than the sample which he examined. Dr. Owen Rees found 13 1-5 grains of arsenious acid in 12 fluid ounces of commercial sulphuric acid, and Mr. Watson states that the smallest quantity of arsenious acid which he detected in the same amount of commercial acid was $21\frac{1}{3}$ grains. As the proportion of oil of vitriol used in making these artificial manures is *very large*, the quantity of arsenic present in such manures must be considerable. For example, in the manufacture of super-phosphates, the most valuable

of this class of manures, about one ton of acid is used for every two tons of bones employed; so that *every three tons of the mixture must contain at least 3 pounds of arsenious acid, or white arsenic, which is equivalent to one pound of poison to one ton of such a mixture.*

2. *Will growing plants absorb arsenic without injury to vegetation?* Before stating the results of Prof. Davy's experiments in relation to this question, it may be proper to premise, that the conclusions of previous observers are somewhat contradictory. The effects of arsenious acid on plants, have been studied by Jæger, Marcet, Macaire, and by others, and, from their observations, we learn that it is poisonous to a larger number of vegetables.—Seeds which have been soaked in a *very strong* solution of arsenious acid are incapable of germinating, and buds which have been plunged in it are no longer capable of expanding. But more *recent* experiments, prove that arsenic in a *weak solution* exerts *no injurious effect* on the germination of seeds, while it destroys the spores of many parasitic fungi—it is thus frequently employed in the steeping of corn. The injurious effects observed by the earlier experimenters seem, in a measure, owing to the *strength* of the arsenical solutions which they employed. Even the strongest solutions of arsenic seem to exert no injurious influence on some cryptogamic plants, as proved by the experiments of Jæger, Gilgenkrantz and Pereira. In relation to the *absorption* of arsenic by plants, the experiments of Jæger and Pereira are quite accordant; for, on burning vegetables destroyed by this poison, an *alliaceous odor* was observed by both of them—indicating the presence of arsenic in the plants.

Returning to the experiments of Prof. Davy: In June, 1857, he transplanted three small plants of peas into a flower-pot, and watered them every second or third day, with a saturated aqueous solution of arsenious acid; and this treatment was continued for more than a week without its appearing to exercise any immediate injurious effects on the plants. After this period, the watering with the arsenical solution was discontinued, and after some months he found that the plants had grown to about their full size, had flowered and produced seed, showing that arsenic had not apparently exercised any decided injurious effects on those vegetables. The stalks, leaves, and pods of the peas, were carefully collected and kept for chemical examination. On employing conjointly Reinsch's and Marsh's methods of testing the presence of arsenic, Prof. Davy obtained the most satisfactory results. *He readily detected arsenic in the stalks and leaves, and even in the seeds of the pea-plants which he had watered with the arsenious acid;* showing clearly, that arsenic had been freely taken up by those plants, and that every portion of them appeared to have imbibed the poison.

This experiment having proved that arsenic might be taken up in considerable quantity by plants, without its destroying their vitality, or interfering with their proper functions, Prof. Davy proceeded to ascertain if the arsenic, as it existed in different artificial manures, (such as the super-phosphate,) would in like manner be taken up by plants growing where those manures had been applied.—To determine this, he transplanted a small cabbage-plant into a flower-pot, in which he had previously put a mixture of one-part of super-phosphate to four parts of garden mould. After it had been growing in the mixture for three weeks, he cut off the top of the plant, which looked perfectly green and healthy—and examined it for arsenic. *He obtained the most distinct indications of the presence of that substance,* though only 113 grains of the cabbage were used in the experiment. This result was, therefore, perfectly conclusive, as to the power possessed by some plants, at least, of taking up arsenic from manures containing that substance.

As in the foregoing experiment, the plant had been placed in a most favourable condition for absorbing the poison, and a much larger proportion of super-phosphate had been used than was employed in practice, Prof. Davy's last experiments were to ascertain if the presence of arsenic could be detected in the crops grown with super-phosphate in the *ordinary way.* For this purpose, he procured some Swedish turnips which had been grown with super-phosphate, and having most carefully washed them, to remove any particle of adhering clay, he cut up in small pieces 2 pounds weight of one of the turnips, and boiled them in a large glass flask for about three hours, with 36 fluid ounces of distilled water, to which he had added 3 ounces of hydrochloric acid, (Spec. grav. 1-14,) placing in the mixture 100 grains of perfectly clean and bright turnings of metallic copper. This is Reinsch's admirable method of testing the presence of arsenic. After proper washing and cleansing from vegetable and fatty matters, the copper-turnings were found to have acquired the *characteristic steel-grey appearance, produced by the presence of arsenic, under such circumstances.* In order to make the proof still more cogent, the arsenic which had been deposited on the copper-turnings, was sublimated by heat in a glass tube, dissolved in distilled water, and tested by Marsh's apparatus: *the indications*

of the presence of arsenic, thus obtained, were of the most unequivocal character. This experiment was repeated with the same results, using 2½ lb. weight of turnip, taken from another of the turnips, which had been previously *peeled.* It may be proper to observe, that in all these experiments, *all the reagents employed were previously ascertained to be free from arsenic;* and to avoid all possibility of error, comparative experiments with the reagents alone were made in every step of the different investigations.

The turnips which Prof. Davy experimented on were grown by Mr. John Rathbone, Dunsinea Co., Dublin; and he was informed that 600 weight of super-phosphate had been used to the Irish acre—the superphosphate being previously mixed with peat and clay, in the proportion of one part of the superphosphate to three parts of the mixture of peat and clay. These experiments appear to be perfectly conclusive, as to the power possessed, by some plants at least, of taking up arsenic when it is introduced into the soil by artificial manures which contain it, even when they are employed in the usual way and proportions by agriculturists—and how objectionable it is to use any materials in the preparation of those manures which will introduce so destructive and dangerous a substance as arsenic into the soil.

3. *Are such plants proper food for animals?*—The foregoing experiments having demonstrated the presence of arsenic in vegetables grown in soil which had been manured with artificial super-phosphates, the answer to the above interrogatory has the most important bearing in relation to the health of domestic animals, and of man. For though the quantity of arsenic which occurs in such manures is not large, when compared with their other constituents, and the proportion of that substance which is thus added to the soil must be small, still plants may, during their growth, as in the case of the alkaline and earthy salts, take up a considerable quantity of this substance, though its proportion in the soil may be insignificant. Moreover, as arsenic is well known to be an *accumulative poison*, by the continued use of vegetables containing even a minute proportion of it, that substance may collect in the system till its amount may exercise an injurious effect on the health of man and animals. Unfortunately, Prof. Davy has not yet been able to furnish satisfactory evidence in relation to this important point. As connected with this subject, however, it is proper to observe, that he was informed of a curious fact, namely, that sheep did not appear to like Mr. Rathbone's turnips which were grown with super-phosphate, so well as those where the ordinary farm-yard manure had been employed, and that they could not be made to eat enough of the former turnips to fatten them properly. If this was really the case, it would appear to favour, in some degree, his views, as to the probable unwholesomeness of vegetables grown with manures containing, even in small quantities, so deadly a poison as arsenic, which, his experiments have shown that plants are capable of taking from such manures. All practical agriculturists will look with increased interest to the results of the investigations which Prof. Davy has promised to undertake in relation to this highly important hygienic question.

In consideration of these facts, our farmers and planters have a right to demand of the manufacturers of super-phosphates and other artificial manures, that they employ no materials in the manufacture of them which contain the slightest amount of arsenic. What kind of sulphuric acid is used in manufacturing the super-phosphates? If they employ the *cheap pyritic oil of vitriol,* such as is used in Ireland, there can be little doubt but that the manures thus made contain at least *one pound weight* of arsenious acid to every ton of super-phosphate. Do the American manufacturers of super-phosphates employ the uncontaminated acid? Fortunately, the tests for arsenic are so simple and satisfactory, that deception is out of the question; the artificial manures can be tested for arsenic by methods which are *perfectly conclusive.*

For the Farmer and Planter.

Mr. Editor:—Herewith I send you a communication which I think is worthy of a place in the *Farmer and Planter*—if you think so, please publish it. It was written by a young friend who may write more for your paper, if agreeable.

S.

ECONOMY IN FARMING.

Although only a brief period of my life has been employed in practical farming, yet I have been an attentive though silent observer of the agricultural interests of our country for many years, and, therefore, hope I may be shielded from arrogance, whilst I endeavor to advance a few arguments on the importance of agricultural economy. And I would here remark, by the word economy I do not mean a system of penury; but place it in opposition to extravagance. I do not mean that farmers should so allowance their negroes or working animals, as to disable them from doing their full quota of work. I do not mean that they should, in the Fall, after gathering their crops, sell corn for 50

cents per bushel, and in the Spring pay from 75 cents to $1.25. I don't propose for them to clothe their negroes in their cotton goods in Winter, or cause them to inhabit cabins through the cracks or crevices of which there is nothing to stay the wintry blast. These and a thousand such pictures that I could draw, are what I term *non-economical*. The word economy is often confounded with illiberality or stinginess. But I hold that a man can be strictly economical, yet an honest and generous one. There is no use or sense in prodigality. I care not how wealthy a person may be—if they had the income of the Rothschilds—there is no use in foolishly squandering it, when, by a system of rigid economy, they might be the means of diffusing countless thousands of blesssings upon their fellow-men.

I have often of late thought of the truth of the following lines of an old hymn, which, doubtless, is familiar to all:

> "Afflictions, though they seem severe,
> In mercy oft are sent."

In the year of 1845, during the unprecedented drouth, I was at a loss to divine what good could result from the dispensations of Providence by cutting off our crops, and causing suffering to a certain extent. But I can now look back and see it solved. Millions of acres of land over this continent, which was once considered worthless, have been brought into a high state of cultivation, and are now teeming with luxuriant crops. I allude to the swamp-lands which have been cleared since the drouth, which were and have been, from time immemorial, filled with quagmires or cow-mires, and fit only for the abode of wild beasts and vermin that were often highly obnoxious to the planting interest of the farmer. I have never known provisions scarcer in this country than at the present time, everything commanding the highest figures. In fact, the article of corn cannot be had, in many places, for love or money. Who doubts but there is some wise purpose connected with this, or some great good to result from it? Tis true the ways of Providence are mysterious, but we may well suppose 'tis intended to learn us a useful lesson of economy.

I will now proceed to say something relative to the many ways in which the farmer may use and apply it, from the clearing up of his lands to the disposal of his crop. In the first place, then, I would advise them to prepare themselves with the *very best of tools*, previous to commencing, for 'tis utterly impossible to do as much work with a mean or indifferent tool as with a good one, whilst the fatigue is just the same—indeed, greater. To illustrate the idea of some persons' economy, we will relate an anecdote, told me by a worthy old gentleman of this place: Whilst superintending the work on a public road, he had occasion at one time to send a negro a few steps from the road to cut down a tree—the boy worked faithfully, and grunted awfully, for some time, when the old gentleman, perceiving that he made but slow progress, approached him and inquired the cause. Boy exclaims, "See, massa, axe powerful dull." "Why in the world, then, did you not grind it?" "My God, massa would take all the hide off my back if he catch me grind 'em; he say he wear out axe too soon for grind 'em;" at the same time thrusting his hand in his pocket, he pulls out something in the shape of a hand-saw-file, and fell vigorously to work on his axe, exclaiming, "dis de file for whet 'em; bos say I mus use dis, when he dull."*

This is no fancy sketch; for we have seen, frequently, able-bodied negroes hoeing grassy pieces of ground with just half a hoe, plowing with grape-vine lines and hickory withe traces. As a matter of course, it gives the horse ample time to blow; for every time the plow strikes a stump or a root away goes the gearing, and away hies the plowman to the woods to skin another sapling! Still this is economy, they say. They have no harness-maker's bills to pay, at all events.

After having supplied yourselves with good tools, and finished clearing, one word as to fencing, making rails, &c.; and we would here suggest the propriety of making as many rails, as possible, out of full grown timber, and avoid, as much as possible, converting saplings into that use, as one heart-rail will out-last two made of sap-timber; and, by all means, build your fences close and high enough to turn stock; for we have known many planters much annoyed for the want of good fencing, and many unpleasant altercations to have existed on this account. At all events, build a lawful fence, and, if you have to worry or injure your neighbor's stock when they break upon you, it will afford some consolation.

As to the management of negroes, we would say, by all means give them comfortable and cleanly quarters, houses not too close, however. Diet them with a healthy, substantial fare; good wool clothing for winter, then see that they work. There is one error common to a good many of our farmers; that is, exposing and working them in rain, or snow,

* The "old gentleman" referred to was myself, M.. Editor, and the owner of the negro was, at one time, the editor of an agricultural paper, then published in Charleston, S. C. Do you, Mr. Editor, use a worn-out file instead of a grind-stone, for fear of wasting your metal?
S.

or any kind of weather. Such treatment may not tell on them immediately, yet it will, in the course of time, in the shape of consumption, rheumatism, &c. Again, in the matter of stock-raising, we think much more economy may be used than is generally practiced by a great many. I have often wondered that some of our most intelligent planters had never learned the great value of housing stock of various kinds in hard spells of weathers.—We believe the most of them do make out to pen their horse-flesh under some kind of shelter, and frequently it happens that's a poor sort of make-shift. But the fewest number of them ever seem to give their cows, or sheep, or swine a passing thought—as if the creatures could not appreciate a good shelter and a warm bed. We have frequently been shocked, in riding through the country, to have seen cattle exposed to sleets and snows, covered with icicles half a foot long; and, not unfrequently, you will hear their owners complaining of the large quantities of food they destroy, in comparison with the milk they give—and, at the same time, their very fountains are frozen within them; and by the time spring rolls around, it will take two of them to make a shadow, or you will hear the milk-maid halloe for Dick, Tom, or Harry, to come and prop up *old muley* "again" the fence-corner, while she exhausts her bag of the blue contents, that will require two skimmings with a spoon, and one with a feather, ere she can procure cream enough for a cup of coffee.

We would urge it upon you, by all means, to protect your stock from the inclemencies of the weather, by building good shelters. It will more than remunerate you for your trouble and expense in one winter. The next step to be considered is the proper mode of feeding them. Much may be saved in this respect; and I am strongly impressed with the belief that we consume or waste a third more than is necessary. How often is it the case, we have seen provender scattered abroad, over a lot knee-deep in mud, about one-half of which is trampled under foot, whereas, had it have been cut up and brined, and placed in clean troughs, one-half would have answered, and would have been devoured much more heartily. It is a great saving to grind all grain, and cut up all provender that is fed to cattle and horses, it is easier digested, and, of course, more nutritious. We have frequently seen sheaves of oats or wheat thrown in to a horse without even untieing the bundles; the consequence was, they would nip off part of the heads, and the remainder of the heads and straw would be wasted in the stall. 'Tis true it made manure; but had they been cut up properly they would have nourished the animal and made a better article of manure.

Just here, Mr. Editor, I must close, for want of time, &c.; but will do so with the promise of continuing the subject at some future day, provided what we have said meets with your approbation, or is worthy of publication.

Yours, &c.,

Pendleton, Sept. 12, '59. GIBBES.

For the Farmer and Planter.

THE HORSES WE WANT.

I have read, with much interest, the article from Mr. Lieber, in the last (September) number; and his suggestions of adapting the plants we cultivate to the soil and climate, is the true and only way to success.

But I must beg leave, most defferential, to differ with him in his views as regards our horses. I never have and never can be made to believe that our horses have became light and weak from being so much intermixed with the blood of the thoroughbred, for my own experience, of the last twenty years in using horses, and in the last fifteen in breeding horses, is just the reverse.

I have found, under the saddle, in light draft, in the plow, and in the wagon, that blood will tell. But, mark me, I do not mean to say that all and every thorough-bred will excel in each of these places, merely because they are thorough-bred, but they must have the form for each and every place.

I cannot agree with him about the German horses being an improvement to our road or plantation stock, for, to import the stallions to put to our mares will never do, it being an established fact, that the best of colts are got where the stallion is rather under the size of the mares. And even if they would cross, we want no horses over 15½ hands high, for common purposes, if they are of the right make and form.

I contend that we have the material here at home for breeding as good horses as we need, if we would only set about breeding and raising colts in a rational manner. A man wishes to raise a colt, he picks up an old broken-down mare and puts her to the first stallion that chance throws in his way—perhaps an unmatured or three-year old colt. The mare is half starved, and when she foals she and her foal have to make a living in a broom-straw old field or pine-barren. There are certain established rules in breeding horses, departure from which always results in failure; and even sometimes when they are most strictly followed, disappointment will come. Great judgment is necessary in choosing a brood-mare, and just as much in choosing a proper

stallion to breed her to, after she is procured. But most persons think and say that is a finely bred horse and must breed good colts, without ever looking over his points; and many who are desirous of breeding a race-horse will put a fine mare to a very ordinary looking and badly shaped horse, merely because he was got by such a horse. From such breeding weeds must come, and then the fault is laid upon the race-horse—too much race-blood.

Give me always a thorough-bred stallion, even to raise plantation horses. But he must be of the right form; and the finest race-horses are not those who will get the best half-bred horses for all work.

CANDOR.

For the Farmer and Planter.

THE CORK AND OTHER OAKS.

Friend Leiber, in his stray notes on the Agricultural capacities of South Carolina, deals hard blows on the Agricultural Department of the Patent Office, and, beyond all question, many of them hit the nail on the head. He admits that some plants for kitchen use have succeeded, and I say ditto; for about the best Rutabaga turnips which I have ever seen, were grown from Patent Office seeds. He states that he has only known the cork-oak to germinate in the hands of one gentleman. This, I think, must have resulted more from the want of experience than any defect in the acorns. I planted three, which all germinated, and have made as vigorous a growth as probably any other kind of oak would have done.

I once procured some live-oak acorns, and planted pretty much like corn, but have never seen anything of them since. I have known others to plant of the willow and swamp-oak, and fail in the same way. After my failure with the live oak I observed how nature carried on such operations, and noticed that all covered with some trash or leaves, so as to keep off the sun and retain a little moisture, vegetated freely—hence my success with the cork-oak.

The live-oak is of slow growth, but succeeds very well, and makes a handsome shade-tree, retaining its foliage all the winter of mild seasons, and is seldom bare of leaves more than two months during the hardest winters.

The water, or swamp, and willow oaks, are my favorites for a grove. They put out early in the spring, are a beautiful lively green, free from the ravages of insects, make a close shade, and retain their leaves until late in the season—the trees grow to a large size, and of stately form, are long-lived, and only seem to improve by age.

An abundant supply of oaklings can generally be found in any neighborhood for the purpose of shade trees—if not, they can easily be grown from the acorns—plant shallow and cover with woods-mould or a little charcoal-dust.

There is more of the true beauty of appearance in a handsome grove than in a costly flower-garden, neglected, and full of grass and weeds.

In my rambles over the country, I have noticed many churches almost destitute of shade. Would not the man who would plant oaks, or some desirable kind of shade trees, in the bare places around a church, be performing the ground work for a lasting monument to his memory, and merit the good-will and thanks of "generations yet unborn?"

The cork-oak will give us another species of shade tree, and probably nothing more. It may be questionable whether the bark would answer the purpose of making corks in our climate, and, provided it should, we would not be satisfied to wait eight or ten years each time for the bark to attain sufficient thickness; and besides, we could not afford to make them at the present high price of labor and the low price of corks.

The same result would hold true in regard to the tea-plant, as we could not afford to gather and dry the leaves at the present low price of tea.

AMATEUR.

For the Farmer and Planter.

Mr. Editor:—For the benefit of myself and others, who, like me, need information on the subject, I would be pleased to receive through the *Farmer and Planter*, some instructions as to the use of cotton-seed *as a manure for cotton*—the manner of applying it—the quantity necessarry to the acre, and any other information, *germain* to the subject, you, or any of your readers, may be pleased to furnish.

In my neighborhood, and, I believe, pretty much throughout my District, cotton-seed, when used as a manure, has been applied almost exclusively to corn. Its utility as a fertilizer, in the culture of cotton, is but little known in this section, and a few practical hints on the subject would be duly appreciated.

Some agricultural writer—Dr. Cloud, of Ala., I think—advises that cotton-seed, when used as a manure for cotton, should be sown in the month of February, at the rate of 12 or 15 bushels to the acre, in furrows, from 8 to 10 inches deep, and covered by throwing up two furrows on these, and adding two furrows more just before planting, (about 10th or 15th of April,) so as to form a bed. Is February the best time for sowing the seed as a manure, and would 12 or 15 bushels to the acre be sufficient,

where the land, in its natural state, unaided by manure, would yield from 600 to 700 lbs of seed-cotton to the acre?

While writing, allow me to make an inquiry, on the matter of cake-making: In the August number of your entertaining and instructive journal, there are recipes for making Doughnuts, Queen's-cake, Soda-cake, Ginger-cookies, Snow-Ball-cakes, &c.,—in none of which is flour named as an ingredient.—Was this an accidental omission? or is flour an unnecessary constituent in the manufacture of these various cakes? On this point, information is respectfully solicited, for the benefit of our "better-halves" and "Bonnie Lassies," most of whom, no doubt, consider themselves *some* in the science, or art, (which is it?) of cake-making.

Williamsburg. D.

[The Publisher pleads guilty to the cakes, and promises, if the ladies will let him off this time, he will be more careful in mixing his flour hereafter.]

From the Country Gentleman.

GYPSUM OR PLASTER OF PARIS.

Closing a recent article on "Clover and Gypsum," (Co. Gent., Aug. 4, '59,) we promised to speak of the mineral constituents of the latter, and its practical uses as an application to the soil. We do not expect to offer any new theory in regard to its action, or anything beyond what a careful examination of published researches and experiments of others, and our own trials of it, upon the different products of the farm, have taught us. So much even, may interest a portion of our readers.

Gypsum, or sulphate of lime, is a mineral compound, frequently met with in large quantities, and where it may be quarried like stone. Many soils contain it in greater or less amount, and it is taken up by certain classes of plants—as their ashes show on analysis—and it is found in the excrement of grazing animals. Chemical science states the constituents of 100 pounds of native plaster or gypsum as—water 21 pounds, lime 33 pounds, sulphuric acid 46 pounds—the water being in chemical combination with the sulphate of lime. When burned or calcined, the water is driven off, and the 100 pounds of plaster is composed of 41½ pounds of lime, and 58½ pounds of sulphuric acid, and 79 pounds, burned, equalling 100 pounds unburned plaster.—This analysis is that of pure gypsum, but plaster as usually found, often contains several per cent. of other substances, as clay, carbonate of lime, &c.—If much lime be present, it will injure the value of the plaster as an absorbent of ammonia, for which purpose pure gypsum is often usefully employed in stables and upon dung-heaps, but as a soil dressing such plaster is as valuable as though pure, and more so than where lime is wanting.

The agricultural effect of plaster is the same, whether burned or unburned, if equally pulverized. When reduced to powder in a raw state, it does not swell by absorbing water, even if placed in it, but remains like sand. If properly burned, and then exposed to atmospheric influences, it regains its 21 per cent. of water, but after that has no special attraction for moisture. Hence we see no ground for the opinion entertained by some, that plaster benefits vegetation directly, by attracting to it a greater supply of water than it would otherwise receive.—Over-burning injures the attractive power of plaster—hence, ground plaster is generally preferred and employed.

It is very generally conceded that gypsum is beneficial to most leguminous plants, and especially to red and white clover. It is frequently applied to peas, beans, corn, potatoes, and like products, and sometimes to wheat, oats, and barley, but most writers agree that its direct application to grain crops is of doubtful utility. Prof. S. W. Johnson, speaking of the effect of plaster, says: "Experience shows that the increased growth of a plant consequent upon the use of gypsum is disproportionately great in the *stem* and *foliage;* the production of *seed* is not greatly increased." This agrees with the general opinion and practice of farmers—those plants which yield a large mass of vegetation, and are valued mostly for this product, are thought to best repay the application of plaster, while it is seldom given on grains mostly cultivated for their seed.—Tobacco and corn with abundant stems and leaves, and potatoes with large vines and fleshy tubers and little seed, are adduced as further examples. Experiments have shown a large increase in the vine or straw of the pea, produced by a dressing of plaster, while the seed itself was but slightly affected in product.

Plaster operates most beneficially upon light, dry soils, or those of a sandy or loamy character.—"*Excess of moisture* and *poverty of the soil*," says Johnson, "are the chief hindrances to the action of gypsum." The richer the soil and the better the culture, the greater the benefit received from a dressing of gypsum. Some soils, however, already possess a sufficient supply of sulphate of lime—or at least of sulphuric acid—hence, no further application is required. Mucky soils are usually of this character, and sandy land, overrun with sorrel, needs lime or ashes rather than plaster, as a fertilizer.—Soils abounding in vegetable mold receive little benefit from gypsum, but even clays, if dry, and deficient in mold, are much improved in productiveness by plaster.

The action of gypsum is largely influenced by the character of the weather. It proves most beneficial in a warm, moist season—in one of a contrary character the effect is scarcely evident. This has been explained as resulting from the more abundant moisture of frequent rains, which dissolve a greater amount of the plaster, and thus renders it available for the use of plants. At the same time the greater heat augments the chemical action of the leaves upon the sulphate of lime, decomposing the same and rendering it active upon the other minerals contained in the soil. We have found that upon clover closely pastured, its effect is slight, while a similar field allowed to grow uncropped, was decidedly benefitted. This indicates, we think, that the good effects of this stimulant are elaborated through the leaves of plants, and the additional elements

drawn from the air and soil by the more abundant vegetable growth.

The quantity usually applied is from 100 to 300 lbs per acre, repeating the smaller amount more frequently—perhaps annually—on all crops to which it is found beneficial. It is usual to sow plaster on land newly seeded to clover, and the clover crop may be largely increased by an annual dressing of this fertilizer. Some have sown it on clover after cutting the first growth for hay, in order to increase the second growth for seed; but the desired effect has not usually been attained. The growth of clover hay has been increased, but the product of seed was imperfect, and a light crop. For corn and potatoes, a hill-dressing, after the first hoeing, of a spoonfull to the hill, is generally given, though some sow it broadcast even on these crops. For wheat, many farmers recommend plastering the summer-fallow, either before breaking up the same, or previous to the last plowing. Upon peas, beans, buckwheat, &c., it is usually sown soon after the plants appear above ground. The effects of any application of gypsum, are generally increased and hastened, if followed by a warm and abundant fall of rain.

Gypsum, as we have formerly remarked, is not, strictly speaking, a *manure*, nor will it answer *instead* of manure. But on soils already fertile it acts as a stimulant, enabling certain crops to appropriate more readily and largely the food of plants already present in the soil, dew or rain, and atmosphere. It does not exhaust the soil, save as all increased production exhausts it—drawing upon its stores of fertility in proportion to the crop produced. It takes, as stated in our former article, an important part in the system of green manuring, by plowing under the clover plant—one of the cheapest processes of enriching a soil not yet worn out, which has ever been employed. Its use in agriculture should be largely extended; if any are in doubt in regard to its effect upon their soils, a few simple and inexpensive experiments will test the question, and perhaps many other points now rather inconclusively settled.

From the Genesee Farmer.

PASTURING HORSES.

Few of the writers who have discoursed upon the management of horses, have said anything about the Summer grazing of these animals. Nor, in fact, is it a subject upon which much of importance can be said. Yet there are some points connected with it, well worthy of consideration. Youatt says: "The Spring grass is the best physic that can be given to a horse. To a degree which no artificial aperient or diuretic can reach, it carries off every humor that may be lurking about the animal. It fines down the roundness of the legs, and, except there is some bony enlargement, restores them to their original form and strength. There is nothing so refreshing to their feet as the damp coolness of the grass into which they are turned, and nothing is so calculated to remove every enlargement or sprain as the gentle exercise which the animal voluntarily takes, while his legs are exposed to the cooling process of evaporation that is taking place from the herbage on which he treads. The experience of ages has shown that it is superior to all the embrocations and bandages of the most skilful veterinarians. It is the renovating process of Nature where the art of man fails."

From this, it will be seen that the benefits to be derived from pasturing horses are considerable.

A recent writer in the *Mark Lane Express* says: "The condition in which working horses are usually kept the latter part of Winter, is perhaps, no bad preparation for Summer grazing. It is, however, desirable that the little remaining flesh these animals carry should be still further reduced, so that the change of flesh they obtain may be, as far as possible, a renewal, and with it a renovation, of the vital power or constitution of the horse."

It is a matter of some importance what kind of grass horses are grazed upon. Many graziers think it undesirable to turn horses into clover when it is rank, and near or in blossom, believing it renders them liable to lay on flesh too fast, and become "pot-bellied," as it is called; and that if they are driven or ridden during the day, it makes them perspire heavily, and more apt to become broken winded, or roarers. White clover, particularly, is not good for grazing horses upon. It has a tendency to cause the excessive salivation commonly known as "slobbering," which weakens the animal, and brings him down in condition, even though he should be unemployed. This is most particularly the case in the latter part of the Summer and Autumn, when the white clover is putting out its second blossoms; young red clover is also liable to the same objection at this time. The best pasturage for horses is generally considered to be timothy, red-top, blue-grass, or any of the finer meadow grasses. Timothy, however, is injured by the close bite of horses, if they are turned into it during the early part of the season; but after it has blossomed, or been cut, the tender leaves that then spring up are just the thing for horses. If horses are to be turned into clover, it is best to be done after cattle have eaten it down, as horses prefer a short sweet herbage. Horses that are to be kept steadily at work through the Summer, are better to be fed on dry food and grain, with an occasional feed of cut grass; but if it were possible, every horse should have a month's run at grass, during the Summer season, and he will come out almost a new animal.

When young colts are kept at grass, they should be placed in a pasture among either cattle or sheep, but not older horses, as they love to graze those precise spots not well relished by other stock, and from their playfulness, they are apt to get kicked or bitten.

It is a good plan to have the shoes taken off such horses as are intended to remain for some time at pasture; it prevents contraction of the hoofs, and renders them less liable to injure one another while capering about the fields.

Mares with foals by their sides are always better to be kept in pasture, even if they are worked occasionally; and it is desirable, where they are to be worked, that they should be accustomed to leave their foals in the pasture while at work, allowing the foal to get to them only at noon, and after working hours. It is well to give the mare a feed of oats daily, for a short time, previous to weaning the foal.

Let it be given her in such a manner that the foal can be induced to partake of it, that the feed may be continued to him when weaned, as it is then essential to compensate him for the loss of the milk of his dam. If the colt is expected to turn out a superior animal, and the mare is not wanted to work, it will be conducive to that end that he should be allowed to run with the dam till he is a year old, before weaning, and then have a drink of new milk, fresh from a cow, given to him daily, during the ensuing season. Yearling colts should always be well taken eare of during the first Winter—well-housed and well-fed—to keep them growing. It is poor policy to turn to grass a yearling eolt in poor condition, thus rendering him peculiarly suseeptible to contract catarrhs, swelled glands, bronchitis, pneumonia, roaring, &c., and liable to scouring, colie, inflammation of the bowels, &e., resulting in permanent bodily weakness, or even death, unless subjeeted to the most careful treatment. Two-year-olds are by no means to be so much cared for. Give them good pasture, plenty of room and water, and they are sure, if healthy, to grow and become fat.—If intended for sale at the end of the season, they may be pushed forward still more by a feed of oats given daily.

Soft water is always to be preferred to hard spring water for horses; and the water of a pool or brook, to that of a well. In warm Summer weather, it is better not to give the animal cold water, fresh from the well, but to have it turned into a trough and allowed to stand some time before he drinks it.

Horses that are worked should never be allowed to remain in a pasture at night when the weather beeomes ehilly or wet, especially in Autumn.

From the Country Gentleman.

TURKEY BREEDING.

Few turkey-breeders are aware of the superior advantages of retaining old birds for breeding purposes. The most of our farmers dispose of their old turkeys, as they call them, every Fall, which is, in fact, at least two years before they have reached their maturity, and just so long before they have arrived at the best age for breeding purposes. Audubon, the distinguished Ameriean Ornithologist, says: "The third year the male turkey may be said to be an adult, although it inereases in weight and size for several years more. The females, at the age of four, are in full beauty." The naturalist was then speaking of the wild turkey; but as all our families of domestie turkeys have descended from the American wild, not more than about three hundred years ago, and frequent crossings are known to have been made from that time down to the present, it is but reasonable to suppose that the law of growth, that governs the wild turkey also, to a great extent, controls the domestic. Indeed, domestication has only changed the eolor of the plumage.—No breeder of sheep would think of improving his flocks by disposing, each year, of all his old sheep, and breeding only from lambs, yet he would be quite as wise as he who annually retains only young turkeys for breeding purposes, for the sheep certainly reaehes its maturity as soon as the turkey.

Old hen turkeys do not lay as early in the season, nor as many eggs as young birds, but the young chicks are so much stronger, hatched from the eggs of the old bird, that, with ordinary care, more young, as well as better, will be raised in a season, from the old hens.

Select the earliest hatehed, largest, and best formed turkeys for breeding purposes—seeuring a male not related to the females, if convenient.—Keep the hens until seven or eight years old, or so long as they eontinue to lay well, and keep the males until three or four years old, and our word for it, the breeder will be satisfied with the result, for we have seen it tried.

Feed but moderately during the Winter—more generously towards Spring, and plentifully during the laying season, when good hens will lay from thirteen to twenty-five eggs the first litter. These may be hatched with advantage under large hens, especially any of the large Asiatie family. The turkey will soon eommence her seeond litter of eggs, which, in number, will nearly equal the first. A young hen of ours, that weighed about fifteen pounds, has, this season, layed over fifty good eggs. Let the turkey sit on her second litter of eggs, which she ought to bring off early in July.

When the young turkey ehieks, or poults, eome off, which will be in from twenty-seven to twenty-nine days, do not go to stuffing them with dough, allspiee, pepper, nor anything else, for they need nothing but warmth for the first twenty-four hours. The seeond day, give a little hard-boiled egg, grated finely, four or five times, and nothing else. Continue the egg daily for three or four weeks. The eurd of sour milk, made by scalding the milk with a little water, letting it settle, and straining off the liquid, makes an exeellent food to alternate with the egg, after the poults are a few days old. A little stale bread, broken finely, may also be mixed with the eurd, or given separately. After the young are four weeks old, they may be fed with soft feed to advantage, sueh as sealded eorn meal, oat and barley meal sealded; but these meals are poor feed wetted with cold water. It is also recommended by many suecessful breeders, that pans of sour milk be plaeed where the young turkeys may drink of it as often as they please.

Any person ean raise turkeys who will feed often when young, and of only fresh, nourishing feed; and will also keep the cups clean, and the poults out of rains and dews until at least two months old.

D. S. H

African Oats.—The *New Jersey Farmer* gives an aceount of a new kind of oats reeently grown in Lawrence township, New Jersey, sown on the 28th of March, which was fully in seed, and was expected to be harvested on the 20th of June. The seed came originally from Capetown, South Africa. It matures in eleven weeks, and will admit of two erops being grown in one year, on the same ground. The yield is bountiful, and the seed took the first prize at the New Jersey State Fair, last year.

To take Rust out of Steel.—Cover the steel with sweet oil well rubbed on. In forty-eight hours rub with finely powdered, unslaked lime, until the rust disappears.

GESTATION—THE PERIOD ANIMALS CARRY THEIR YOUNG.

At the request of one of our subscribers we have hunted up and transferred to our columns, from "Blaine's Encyclopedia," the following interesting article, and carefully arranged table of analysis on this important subject of plantation economy:

TABLE SHOWING THE PERIOD OF REPRODUCTION AND GESTATION IN DOMESTIC ANIMALS.

Kinds of Animals.	Proper Age for Reproduction.	Period of the Power of Reproduction.	Number of Females for one Male.	Period of Gestation and Incubation.		
				Shortest Period	Mean Period.	Longest Period.
		Years.		Days.	Days.	Days.
Mare	4 years	10 to 12	.....	322	347	419
Stallion	5 "	12 to 15	20 to 30	.....	.....	.....
Cow	3 "	10 to 14	.....	240	283	321
Bull	3 "	8 to 10	30 to 40	.....	.....	.....
Ewe	2 "	6	.....	146	154	161
Tup	2 "	7	40 to 50	.....	.....	.....
Sow	1 "	6	.....	109	115	143
Boar	1 "	6	6 to 10	.....	.....	.....
She Goat	2 "	6	.....	150	156	163
He Goat	2 "	5	20 to 40	.....	.....	.....
She Ass	4 "	10 to 12	.....	365	380	391
He Ass	5 "	12 to 15	.....	.....	.....	.....
She Buffalo	.....	.....	.....	281	308	335
Bitch	2 "	8 to 9	.....	55	60	63
Dog	2 "	8 to 9	.....	.....	.....	.....
She Cat	1 "	5 to 6	.....	48	50	56
He Cat	1 "	9 to 10	5 to 6	.....	.....	.....
Doe Rabbit	6 months	5 to 6	.....	20	28	35
Buck Rabbit	6 "	5 to 6	30	.....	.....	.....
Cock	6 "	5 to 6	12 to 15	.....	.....	.....
Turkey, sitting on the eggs of the Hen	.....	.....	.....	17	24	28
Turkey, sitting on the eggs of the Duck	.....	.....	.....	24	27	30
Turkey, sitting on the eggs of the Turkey	.....	.....	.....	24	26	30
Hen, sitting on the eggs of the Duck	.....	.....	.....	26	30	34
Hen, sitting on the eggs of the Hen	.....	3 to 5	.....	19	21	24
Duck	.....	.....	.....	28	30	32
Goose	.....	.....	.....	27	30	33
Pigeon	.....	.....	.....	16	18	20

"According to the observations of M. Teissier, of Paris, in 582 mares, * * * * the shortest period was 287 days, and the longest 419: making the extraordinary difference of 32 days, and of 89 days beyond the usual term of eleven months. The cow usually brings forth in about nine months, and the sheep in five. Swine usually farrow between the 120th and 140th day, being liable to variations, influenced, apparently, by their size and their particular breeds. In the bitch, on the contrary, be she as diminutive as a kitten, or as large as the boarhound, pupping occurs on or about the 63d day.—The cat produces either on the 55th or 56th day.—The true causes which abridge or prolong more or less the period of gestation in the females of quadrupeds, and of the incubation of birds, are yet unknown to us.

"From some carefully collected and very extensive notes, made by Lord Spencer, on the periods of gestation of 764 cows, it resulted that the shortest period of gestation, when a live calf was produced, was 220 days, and the longest 313 days; but he was not able to rear any calf produced at an earlier period than 242 days. From the result of his experiments, it appears that 314 cows calved before the 284th day, and 310 calved after the 285th, so that the probable period of gestation ought to be considered 284 or 285 days.

The experiments of M. Teissier, on the gestation of cows, are recorded to have given the following results:

21 calved between 240th and 270th day, the mean time being 259½; 544 calved between the 270th and 299th day, the mean time being 282; 10 calved between 299th and 321st day, the mean time being 303.

"In the most cases, therefore, between nine and ten months may be assumed as the usual period; though, with a bull calf, the cow has been generally observed to go about 41 weeks, and a few days less with a female. Any calf produced at an earlier period than 260 days must be considered decidedly premature, and any period of gestation exceeding 300 days must also be considered irregular; but in this latter case the health of the produce is not affected. I will conclude this article with the remarks of Mr. C. Hilliard, of Northampton, who states that the period of gestation of a cow is 284 days, or, as it is said, nine calendar months and nine days; the ewe 20 weeks; the sow 16 weeks; the mare 11 months. The well-bred cattle of the present time appear to me to bring forth twins more frequently than the cattle of 50 years ago. The males of all animals, hares excepted, are larger than the females. Castrated male cattle become larger beasts than entire males."

From the St. Louis Valley Farmer.

AGRICULTURAL SCIENCE---MECHANICAL TEXTURE OF SOILS.

At a late meeting of the Farmer's Club, held at the American Institute, New York, Prof. S. W. Johnson, of Yale College, furnished an able essay on soils, in which certain views were presented, which, together with some facts connected with our own observation, upon the mechanical treatment of certain sandy and gravelly soils, seem to require the light of science to explain. We copy from the essay the following remarks:

"The labors of chemists, to discover positively all the causes of the fertility of soils, have not yet met with conclusive success. The mechanical structure of soil is of primary importance. Naked rock grows lichen—the same rock crushed into coarse grains, grows a much higher order of vegetables—pulverized fine, the cereals grow in it. Geology, chemistry, botany, physiology, meteorology, mechanics, hydrodynamics, heat, light and electricity, are all intimately combined in the grand process of vegetation. There are sandy soils in our Eastern States, which, without manure, yield meagre crops of rye and buckwheat; but there are sandy soils in Ohio, which, without manure, yield, on an average, eighty bushels of Indian corn an acre, and have yielded it for twenty or fifty years in unbroken succession; the ingredients of these soils being, by chemical analysis, the same. At present no difference is known between them, except the coarseness of the particles; the first being coarse, while the Ohio sand is an exceedingly fine powder. The power of soils to attract and imbibe moisture and oxygen, was well shown by Shubler, of Hoffen, forty years ago. Of thirteen different soils, quartz sand absorbed, in thirty days, over 1-1000 parts of oxygen and no moisture, while humus absorbed 13 of oxygen, and 120 of moisture."

There is a piece of land, embracing sixty or eighty acres, within three miles of where we now write, of the character of the fine sandy land of Ohio, as referred to by Prof. Johnson. While in pursuit of land some years ago, we became acquainted with this piece, and from a knowledge of the character of the sandy land in some of the Eastern States, we were induced to place a very low estimate upon our neighbor's land. This land has since been sold and converted into a vegetable and fruit farm, and has proved to be one of the most sure and productive pieces of land with which we are acquainted. Of course it is extremely warm, and brings to maturity vegetables and fruit some days earlier than any other land in the neighborhood of the city; and for the growth of grapes, the fruit is almost invariably sound, while that grown in any other character of soil is subject to rot; and the capacity of this soil to retain moisture is not surpassed by any other soil, combining any proportion of loam, that we have seen. Probably the great secret of the fertility of this soil lies in its capacity to absorb and retain heat, moisture, and various gases essential to vegetable growth; and this is in consequence of the finely divided character of its particles, which renders it one of the most perfect and desirable soils to cultivate.

Last Summer, while exploring certain portions of Long Island, in the State of New York, which is noted for its light, sandy and gravelly soil, we visited a gentleman's garden and nursery, to witness the effects of *trenching* a light, open, porous soil—purely *sand, coarse gravel and stones*, with a thin surface soil. This ground had been trenched, and entirely inverted to the depth of three-and-a-half feet. Upon the surface a moderate dressing of manure had been cast and spaded in. On the trenched portion were growing various nursery plants, grape-vines, roses, &c., of great luxuriance; but the most remarkable feature was a few rows of cabbage, upon the same prepared ground, no head of which was less than ten inches in diameter, up to a much larger size, all firm and solid, while in the adjoining rows, planted the same time, upon precisely the same soil, manured in the same manner, and spaded to the ordinary depth, *but not trenched*, not one cabbage had headed, but still remained large, loose plants.

In another fruit garden and vineyard of some magnitude, a mile distant, upon similar soil, but more sandy and less gravelly, resting upon a kind of marl or hard-pan bottom, four feet below the surface, this ground had been trenched in a similar manner, with an incorporation of a compost of peat, stable manure, lime, ashes, etc., and during three months' travel among gardens, we saw no more vigorous grape-vines, dwarf pear trees, or other fruit trees, even upon the richest soils of Western New York.

We had supposed that trenching such light thin soils was worse than labor lost. But these instances prove to the contrary, and afford conclusive evidence, that without the preparation of that kind of soil, gardening and fruit-growing would not pay the cost. It also establishes the most important fact in agriculture, that *the more perfectly the mechanical disintegration of the soil is effected, whether light or heavy, the more perfectly it is adapted to vegetable growth;* and if such results are the effects of the deep culture of light soils, how much more important is it that more tenacious soils be deeply and thoroughly pulverized. The more perfect and free the circulation of heat, moisture and the atmosphere and gases in the surface soil, and in contact with the roots of growing crops, the more perfect will be their development.

The largest crops of corn we have on record were grown upon the light sandy soils of the South—although upon thin, poor soils—but owing to their open, porous texture, with moderate dressings of manure, and *timely rains*, these soils produce heavy crops. But such loose, sandy soils cannot be depended on, because of the uncertainty of a due degree of moisture in all seasons. Heavy soils are more retentive of moisture, and are more sure to afford regular crops; but the crops upon these soils would be greatly augmented by a thoroughly broken and pulverized surface. A deep and thorough breaking up in the Spring is not sufficient for Summer crops, but the surface must be kept loose and porous during the growing season, or until the time of "laying by." In this lies the great secret of large crops.

From the London Economist.

AGRICULTURAL CHEMISTRY.

That such a general knowledge of chemistry as most educated persons possess, may be useful to the practical farmer none will deny; but that farmers can or ought to attempt to become scientific chemists, or that they can apply any purely chemical knowledge to the business of husbandry, are propositions few reasonable persons will affirm. At one time the most extravagant expectations were entertained of the benefits chemical discoveries would confer to agriculture, and farmers were frequently and solemnly enjoined to become chemical experimentalists.

Nobody deals more sensibly with the subject of agricultural chemistry than Dr. Voelcker, of the Cirencester College; and in his lecture on "its relation to the cultivation of root crops," delivered before the Royal Agricultural Society, we find its limits very justly defined. He believes that, among the landed proprietors, their agents, and the larger farmers, especially the rising generation, a more extensive knowledge of the sciences applicable to agriculture is needed. All these want better instruction. But to teach the small farmer or the laborer chemistry is simply absurd. To either, the pursuit would be waste of time. So chemistry should never be made the direct guide to the agriculturist. Science is, after all, only the systematic arrangement of well authenticated facts, and the rising generation should be taught its general principles. But many professors of chemistry have over-estimated their own powers, and instead of explaining the experience of practical men, they set themselves up as guides to the farmers; they have over-estimated the powers of the new science, and in consequence stumbled.

The foregoing remarks are very just. Again he says: "Agricultural chemistry, in its application to farming, is altogether a new science; and hitherto it has been, like every new knowledge, too vague and too general in its doctrines, as well as in its researches. What is required at the present time are experiments made for a special purpose—researches carried on in the field as well as in the laboratory. We have no need of the joint labors of practical men and men of science. There are questions which can only be properly investigated if the man of science heartily joins with the practical man, working cheerfully together, each in his own department. A nearer approach between agriculture and science, in short, is what is required at the present time. A general knowledge of the principles of farming, however useful to the practical farmer, never will help him to grow a large crop of turnips; he must have special training in practical matters in order to be a successful farmer. So it is with chemical knowledge. Men may have excellent general chemical knowledge, but if they have not special chemical knowledge in relation to farming, their labors will be of little direct utility to the agriculturist."

In reference to the culture of root crops, he says, that generally, ammoniacal manures, such as guano, are thrown away on roots, and phosphates are more profitable. Guano and super-phosphate of lime, both, rather retard the germination of the seeds, but they push forward the young plant in its early growth. This we believe to form the true value of such manures, though this is over-estimated.

From the Northwestern Farmer.

THE MOUNTAINS OF NORTH CAROLINA—CLIMATE AND PRODUCTIONS.

BY WM. BEAL.

Messrs. Editors:—As it is now the 1st of June, and I have spent the last month, day and night, almost wholly in the mountains, I now hasten to give my promised description of their products, as stated in my last article.

The mountains have but few rocky escarpments or bluffs, although, in many places, very steep and abrupt. They are broken by numerous, almost parallel ridges, enclosing coves of the richest soil, varying in size from an acre to several good farms.—The timber on the extreme tops of the ridges, consists of yellow pine, chesnut and chesnut oak, with an undergrowth of false accacia, wild grape-vine and kalmia, with an occasional space covered with the Red or McDowel's Rhododendron. The coves or valleys are covered mostly with a dense growth of poplar, black-walnut, ash, butternut, hickory, buckeye, holly, serviceberry, prickly-ash, and a variety of oaks, cherries, &c., some of which are of gigantic proportions, as one poplar, that I measured, required a three feet line in addition to my surveying chain, to measure its circumference, at six feet from the ground, and bearing its great size to ninety feet, without branches. One grape-vine, that I have not seen, is said to be large enough to make twelve rails to the cut, and firmly interlocks the tops of over half-an-acre of timber with its tendrils.

The soil in the coves and on the hill-sides is very rich, and on the sunny slopes well adapted to the growth of the grape, which, in the fire-scalds, has taken such full possession, as to render it next to impossible to pass through them, especially after they are in full foliage.

The height of our mountains makes a difference of four weeks in the forwardness of vegetation, between their tops and the valleys at the base, as may be judged by the fact, that, when I left the mountains a few days ago, the leaves on the white oaks were not more than half grown, and in the valleys the wheat fields were changing their color for the harvest. This difference also gives a great advantage in the cultivation of fruit, which is not, as yet, fully understood, viz: that orchards planted on the high grounds, do not put out their blossoms till all danger of frost is over, so that crops of fruit are almost as sure as crops of potatoes, whilst the warmth of the lower valleys so accelerates the growth of the fruit-buds in Spring, that our crops are frequently cut short, as is proven by the fact, that this is now the third season that our peaches have been cut short, or almost wholly destroyed, on the lowlands, whilst on many of the little mountain farms there is an abundance.

Whilst speaking of this subject, I must refer to a remark made by Hon. T. L. Clingman, in his speech before our agricultural society, in which he refers

to a section of country, on Trion mountain, in this State, where there is no hoar frost, and never has been any, in the memory of the oldest inhabitants. This, however, is not confined to one locality, but appears to be common or universal at a certain height on the mountains—so much so, that the suggestion was made to me by Dr. David Christy, of Cincinnati, whether the facts in the case would not lead to the conclusion, that there is a thermal stratum of the atmosphere, at a certain height, that precludes the possibility of either hoar frost or fog.

I have been led to examine this subject with much attention, and am now satisfied, with all the information that I can collect, that such is the case, as will be seen, to some extent, by the following facts: I, in company with two other persons, own farms on the Franklin mountain, in this county, on which the fruit has never been entirely killed, within the memory of the oldest settler, and on which hoar frosts and fogs are unknown. I can say the same, also, of several other mountain farms, that lie at an elevation of six hundred feet or more, from the lower valleys.

I find the same facts corroborated by Mr. McDowel, of Macon county, who says that he has seen the line of frost so distinctly marked, that the lower leaves of shrubs were completely killed, and the tops were as green as ever, and that the frost would come up to a particular row of corn, completely killing all below, whilst that above would be left as green and flourishing as in July.

This thermal zone, or belt, appears to be the natural home for the grape, and perfectly adapted to its growth, as Mr. McDowel says that he has known the Black Hamburg to ripen its luscious clusters, for the last twenty years, without either rot or mildew. The apple succeeds admirably, although there are but few orchards as yet, in this thermal belt; but I think that the times are changing, and much of our horticultural land is passing into the hands of parties from Cincinnati, who are establishing nurseries among us, and who will probably soon settle colonies of vine-dressers on all our mountain-sides.

Sunny Side, Cherokee Co., N. C.

Cheap and Valuable Paint.—*Messrs. L. Tucker & Son:*—Yours, requesting me to send a receipt for paint, was duly received. At the time, it was not in my power to furnish it, for the reason that the book containing it was not in my possession.—After many inquiries, I found it yesterday, in the hands of a neighbor, who borrowed it some years since. I did not originate the composition, but found it in the second volume of Chaptal's Chemistry; (pages 68 and 69,) an old work, published in 1807.

It is intended as a substitute for white-lead paint, and is composed of

Skimmed mild, two quarts,
Fresh slaked lime, 6½ oz.
Linseed oil, 4 oz.
And common whiting, 3 lbs.

Directions for mixing are—"Put the lime into a stone-ware vessel, pour upon it sufficient of the milk to make it like thin cream, add the oil a little at a time, stirring to mix thoroughly; add the remainder of the milk; then the whiting (made fine) is to be spread upon the surface, and the whole well stirred. It is then fit for use. It should be frequently stirred while using."

It is applied with a common paint or white-wash brush, and will dry in three or four hours. Two coats make a perfect paint. It possesses great solidity, will bear rubbing with a woolen cloth, and does not become dingy or yellow with smoke, &c., as much as lead paint.

I have used the composition only for inside of buildings on brick and wood. Twelve years since I painted the over-head flooring and timbers, underside of a store. It is now perfect; holds its color better than white-lead; is much more economical, as the chief expense is the labor of putting on.

It is also recommended for out-door work, by adding to the foregoing 2 ounces lime, 6 ounces oil, and 2 ounces white Burgundy pitch—the pitch to be melted in the oil by gentle heat, and added to the mixture. Wm. H. White.

Vergennes, Vt. [*Country Gentleman.*

A Remedy for the Big Head in Horses.—The following remedy for the big head in horses, and recipe for preparing the same, was handed us lately by a gentleman who has thorough tested it in several cases. In putting up the remedy it should be distinctly marked "Poison," and carefully kept from children and careless persons. In procuring the remedy go to a druggist, and have him prepare you a junk bottle and put into it the following articles, thus proportioned:

Arsenic 1 oz.
Laudanum 2 oz.
Opodelduc 2 oz.
Spirits Turpentine 24 oz.

Its application is made in the following manner: Pierce the affected part in a circular form, quite a number of times, with a common peging awl, entirely to the bone, then apply the mixture with a bit of sponge or soft cloth saturated with it, after which let the part be thoroughly rubbed with a smooth hard substance, any hard wood or stone will answer. This should be repeated once a week for three successive weeks, when a cure may be confidently expected.

Fistula on the shoulders or withers of horses may be cured by the same remedy.

Changing Pastures.—A milk dairyman near Boston has his pasturing in four lots, and enumerates the following among other advantages in the division: More stock can be kept, by one-eighth, on a given number of acres, by keeping on each one a week at a time; when the fourth is turned into, the grass is fresh and large—and so of each field through the season; the cattle are quiet and peaceable, much more so than when kept uniformly in one lot. His experience makes him a believer in the old saying, "A change of pastures makes fat calves."

Cows often have warts on their udders, and some very bad, which have been cured by simply washing them after milking, for one or two weeks, with brine, which remedy has never failed to cure.

The Farmer and Planter.

COLUMBIA, S. C., NOVEMBER, 1859.

HINTS FOR THE MONTH.

The past month has been a very favorable one for farm work. The temptation to push everything into the cotton-field has been irresistable, and many have probably neglected to sow oats or wheat. Put it off no longer; to escape rust and be sure of a good crop, wheat must be sown as early as November. You need not put it off, thinking that you will have *more time*. Be sure to soak well in a strong solution of blue-stone, roll in plaster, sow plenty of seed, plow in with a scooter, (not deep,) and ditch so as to keep off all surplus water.

If you wish to escape rust or the "midge," (which is getting to be the greatest enemy to the wheat grower) sow early varieties, and such as have a hard, tough chaff.

Pastures.—Rye, barley or wheat may yet be sown on the cotton-fields, to help one through "the Winter of our discontent." It will be tramped in by the pickers, and, if it should not yield much pasture, will serve to keep the soil from leaching, and washing away by the Winter rains. We are satisfied that it will pay to sow down cotton-fields in rye, wheat or oats, at the rate of half-a-bushel per acre, whether you pasture it or not.

Corn should be housed as soon as possible. A light sprinkling of salt amongst it will improve the husk very much.

Pumpkins should be stored before frost-bitten.

Peas should be picked and stored where they can be threshed out during rainy days.

Potatoes, if not gathered, should be, before frozen Put up in conical heaps of 50 or 60 bushels, and cover several inches thick with broomstraw and earth —leave an air-hole at the top. Put a shelter over the banks, with a southern front, and have the north side of the banks well protected.

Stock.—Too much pains cannot be taken to make your stock enter Winter-quarters in good condition. Don't rely upon their "getting pretty good picking a little longer," but see to their condition. It is much easier to keep any animal in good order than to bring back what he has lost. Get your hogs fat as quick as possible, and into the smoke-house. Be sure to salt regularly, and keep plenty of charcoal in your hog-pen.

See that your negroes have good shoes, that their Winter clothes are in good repair, and quarters in good condition. Have all litter and filth removed from their yards, and plaster or coal-dust sprinkled about.

Rainy days repair houses, fences, gear, farm implements, gin and pack cotton, thresh peas, scrape off lots, clean out stables, and make manure in any and every way you can.

IN MEMORIUM.

Within a short period two of our citizens, eminent for their scientific attainments and personal worth, have gone to "that undiscovered country, from whose bourne no traveler returns." Dr. Barton, of Columbia, and Dr. Barratt, of Abbeville.

Dr. Barton's contributions to science are too well known, and too numerous, to be more than alluded to. We are informed that he had collected an extraordinary amount of valuable and interesting statistics, connected with the meteorology of the South, which we trust may be made available. Meteorology is just beginning to be appreciated by the general reader. Its study has been chiefly confined to scientific men, who have found it very difficult to elucidate its mysteries, for the want of reliable observations to begin upon. As the interest of the general reader increases in this most important branch of knowledge, the scientist will become more ardent and indefatigable in his endeavors to bring light out of darkness. We trust that the valuable gleanings of years gone-bye, by Dr. Barton, may be preserved.

The columns of the *Farmer and Planter* have, for many years, been so often graced by the racy productions of Dr. Barratt, that he will not soon be forgotten by its readers.

Dr. Barratt was not less devoted to agriculture than to science. He presided at the Convention which organized the present flourishing State Agricultural Society. He has been devoted to its interests, and a firm believer in its usefulness, to the last. He has left behind him a large circle of friends, long to remember his genial influences, and his devotion to improvement in everything connected with his fellow-man.

"FORMATION OF DEW."

We would direct the attention of our readers to the communication of "B.," on the "formation of dew." This is a very interesting question in Meteorology, and one which bears directly upon agriculture.

The question has been over and over again discussed, but still appears to be "sub lite." Aiken is quite able to take care of himself, and we would be glad to hear the argument exhausted.

How to Hull Corn.—Put one quart of corn into cold water, and add two large teaspoonfuls of saleratus; put it on the fire, and boil it until the hull will rub off easily; rinse it well in cold water, and put it on the fire again, and boil it until soft enough for use.—*N. E. Farmer.*

FAT vs. FORM.

In looking over the proceedings of some of the late Fairs in England, we have been struck by some very sensible remarks, made by experienced breeders, upon the furor for exhibiting fat animals at Fairs.

Fat is the very thing for the eye of the butcher, and if the animal is for sale for the table, it is all very well. But if he is for the breeding department, it is a very different case.

No animal, male or female, pushed from the start, and made to take on the maximum of fat for a show, can be relied on in the breeding department; and hence the disappointment which often follows in the offspring of "*Prize Animals.*" The evil had become so marked in England that it was found necessary to take a decided stand against it.

Would it not be well to profit by the experience of the best stock-breeders in the world, and take a lesson before it is too late? Will our judges, at the next Fair, remember that they are cautioned in the regulations "not to give encouragement to overfed animals, but to make allowance for the age, feeding and condition, especially in the breeding classes."

THE CENSUS AND ITS STATISTICS.

Everybody, at all conversant with newspaper literature, knows how much discussion has been wasted in deliberative bodies, and how much ink wasted in newspapers, upon the "startling disclosures of the census of 1850."

At best it was but a bundle of guess-work—nor could it well be otherwise. The census-taker had to labor against the ignorance, the indifference and the prejudice of the people, who, although they may be fond enough of asking questions, don't like to answer them.

It is our duty as well as our interest, to know how much we have made upon our plantations in 1859, how many animals we have, their value, the cost of our fencing, cultivation, &c.

Let every man, then, write down, in a memorandum book, all these facts, that he, or, in his absence, any member of his family, may be able to answer questions properly. "What is worth doing is worth doing well." Let us keep this in mind, and we may be spared the mortification, in after years, of hearing our own agricultural condition and intelligence misrepresented.

SHEEP.

The enterprising spirit of the proprietors of the Saluda Manufacturing Company, near Columbia, has opened the eyes, we hope, of many, to the importance of devoting more attention to sheep husbandry.

The demand for wool, coupled with the facilities near home for manufacturing it, has had a two-fold effect—that of showing how little wool was in the country, and how important it was to have it.

The greatest wonder to us, however, is, that nearly all the wool received by the mills has been form some two or three *cotton* growing districts—more from Abbeville, we believe, than all other districts together. Do the people hunt foxes or partridges, or allow every negro to keep a possum-dog in Abbeville?

The very districts in the State, best adapted to wool-growing, we suspect, produce the least. In our own section there is not one sheep to where there was twenty ten years ago. The range about us is better than it ever was. A few years ago, in a two hours' ride we could have counted five hundred sheep; there are but two flocks now in this range. The dogs have done the work. After one or two dog forays, a man gets out of all heart and gives up.—We make it a rule to shoot all dogs found sneaking about the plantation, and allow our neighbors to do the same towards us. A dog that will not stay at home, and goes prowling about, making night hideous by his uproarious disturbances in the neighborhood, deserves to be shot. A negro should not be allowed to keep a dog—it is an expensive operation, and often leads to mischief, to boot.

There is no animal which can be raised more cheaply, and which combines so much comfort and profit as the sheep. He comes to maturity at an early age, lives where almost any other animal would starve, and furnishes you with food and clothing at a cheap price.

Our manufacturers have made a bid for our wool—they offer to take all we can furnish, at fair prices, or to manufacture it into cloth for our negroes.—Shall we be so blind to our own interests as to make no effort to provide for our own wants, and to encourage a branch of industry of the first importance to our own welfare and the State's? Then down with the dogs and *vive la monton.*

COTTON.

Many persons can remember the anxiety with which the cotton planters, a few years ago, contemplated over-production—how wise political economists "ventilated" upon its certainty, and the remedy; and how certain politicians called for conventions to arrest this growing evil, which was soon to bring ruin on the South.

It is plain that this bugger-boo has been disposed of; the last "unprecedented crop," (as the papers say) nearly four million bales, backed by innumerable puffs and blows in the newspapers, of first blooms, first bolls, and first bales, with long-winded correspondencies to prove that the present crop will be another "unprecedented one," have not had the effect of reducing the price of cotton below the stan-

dard of profit. So long as cotton will command ten cents, it can be grown profitably in South Carolina; and if we are allowed to draw inferences from its past history, consumption will continue to press upon production, with the same steady, inevitable stride, and every forward movement in the world's prosperity and civilization will only serve to increase its velocity.

We have heard this old story about our competing with the virgin soil of the West, since our childhood. We have read calculations of figurative gentlemen, going to demonstrate that a few counties in Mississippi could make cotton enough for the world's consumption. But it has not yet been done; the great South-West—the cotton belt—has been pretty well picked over; great lands are, in that region, daily becoming dearer, while old ones are wearing out just as ours have done. Westward moves the current, taking labor and capital to regions unsuited to the cotton plant, and we have no fears but that Cotton and "Cuffee" will be one and indivisible as long as civilization exists.

Cotton is King—it is more than King; it is the great peace-maker which is destined to keep the world on good terms, and working together for one another's good. It is only necessary for the South to be true to herself; the world cannot do without the great staple yet awhile.

COTTON-SEED AS A MANURE FOR COTTON.

We call the attention of our readers to the interesting communication of "D.," upon the value of Cotton-seed as a manure for Cotton. We would be glad to have his inquiries answered by some of our readers who have tried the experiment carefully.

We have found cotton-seed one of the safest and best manures for corn, wheat, oats and potatoes, but it has not come up to our expectations as a manure for cotton. A very successful Planter, of our acquaintance, however, says he will give 100th Guano for 20 bushels of good cotton-seed, and make money by the operation. His method is, to plough a deep furrow, drill his cotton-seed, at the rate of 20 bushels to the acre, in it, and throw two furrows upon it. Do it as *early* in the winter as you can, and finish your bed before planting. Our correspondent refers to Dr. Cloud.

Dr. Cloud takes the ground that, if you can get the stalk and the seed, you will be sure of the lint.

1 bush. Cotton-seed weighs.....25 lbs.
1000 lbs. Seed-cotton will give.....25 bushs. seed.
15 bushs. seed, then, ought to give.....375 lbs.

Which, according to his theory, should make 600 lbs Cotton. Hence, "D.'s" acre, with the addition of 15 bushels seed, provided he returns stalk, boll and leaf to the soil, or their equivalent, should give him 1200 or 1300 lbs cotton. But everybody knows (albeit figures have the reputation of never-lying,) how very hard it is to grow upon a *field* what you can demonstrate, as perfectly easy, upon a sheet of paper.—But, while we are on the subject, it may not be amiss to glance at the constituent properties of the cotton-seed, lint and plant, as ascertained by the analysis of Dr. Charles J. Jackson:

1000 grs. clean lint yielded..... 15 grs. ash.
1000 " " seed " ..... 39 " "
Of the whole plant used..... 25 " "

	Lint.	Seeds.	Wh'le Pl'ts.
Silica.	0.150	0.080	0.570
Carbonic Acid,	4.100	1.018	5.600
Chlorine,	1.105	0.480	0.239
Sulph. Acid,	0.779	0.892	0.927
Phos. Acid,	0.581	10.690	2.403
Lime,	1.070	1.126	4.478
Magnesia,	0.250	7.600	2.509
Potash,	4.412	13.096	6.394 and Soda.
Soda,	2.140	4.018	
Peroxide Iron,			1.880
	15	39	25

From the above table the seeds are deficient in Silica—of which there is an abundance in most soils—of Carbonic Acid, of which the air will furnish an inexhaustible supply, if the planter will prepare his soil to receive it; of Chlorine, Sulphuric Acid and Lime. One would conclude, from this, that Plaster (Sulphate Lime) would be a valuable manure. Some of the Alabama Planters claim immense benefits from its use. An experiment of three years has satisfied us that rolling the seed in Plaster pays well.

There are a great many drawbacks in experimental farming; a great many ifs, and ans, and buts; yet the only hope of arriving at the truth, is to keep trying. We like to have planters put questions; it is a sign they are in earnest, and, although it may puzzle us to answer them, or we may fall very far short of their expectations, we feel that there has been one more step taken forward.

What the country needs now is, intelligence applied to Agriculture; it is worth more than Guano.

If every farmer and planter in the country would read an Agricultural journal regularly, our Agricultural condition would soon be revolutionized. And it would not be because he learned so much from the journal, but because it set him to thinking for himself, and begat a spirit of inquiry, which would end in improvement. There is no profession so conservative, so wedded to old opinions, and so averse to new ones, as the Agricultural. And it is for the want of intelligence, properly directed to our own interests, that we are the constant dupes of all manner of humbugs. We jump at every new thing, because it promises wonders, without ever *thinking* upon its merits. Let us write in the Agricultural journals and provoke discussion—let us meet at the

Agricultural Fairs, and compare notes, examine animals, implements, machinery, domestic manufactures, samples of field crops, fruits, and fancy-work, and return home resolved to add to its comforts and attractions, and to be wiser, better and happier men, as well as better Planters.

GRASS.

Dear Sir:—Which of the grasses will suit best to sow in the Fall, with wheat, to make pastures, after the wheat is cut, for sheep, hogs, cattle, and horses? the grass to remain on the land the two following years after the wheat is cut, then to be followed by cotton or corn—the improvement of the land being an important consideration; quality of land, sandy, with clay subsoil, producing about ten bushels of corn per acre without manure. How much seed should be sowed, and how should the land be treated in preparing for cotton or corn after the grass? M.

Remarks:—In reply to our correspondent "M," we can say, that no grass worth having, will grow upon land which will not produce more than ten bushels of corn per acre; nor do we know any grass which, being sown in the Fall with wheat, will furnish pasture for sheep, hogs, cattle, and horses, after the wheat is taken off.

It is a great error to conclude, because we find grass so hard to keep down in our corn or cotton, that it will grow anywhere. An experience of many years with all the grasses we could find, has convinced us that it is one of the most difficult things to "set a field" well, in any of the cultivated grasses in our climate, and upon the soils ordinarily in cultivation.

Sandy soils are not well adapted to grass. Any soil intended for grass should be made pretty rich, and cultivated with one or two cleaning crops, to rid it of the seeds of native weeds and grasses as much as possible. Soils containing lime, and of sufficient tenacity, may be made to grow clover (red) by occasional doses of Plaster being applied when the dew is on; but it should *never be grazed the first year*. Upon wet or springy soils, we have found nothing equal to Herd-grass (Red top). It is perrennial—will afford good Winter pasturage, and one very fair crop of hay. Any gentleman who can supply the desideratum of our correspondent will deserve from the Southern agricultural population a "monument more lasting than brass," and we pledge ourself to be the first subscriber.

GUANO AGAIN!

The immense and increasing demand for guano in the planting States, during the few years past, has led to innumerable impositions, which we feel it our duty to keep the agricultural profession advised of. Guano, under different names, and containing all the most important elements of plants may be found advertised in many of the Northern agricultural journals, at from $30 to $65 per ton.

We insert a short notice of some of the tricks of the trade, from the *Pacific Commercial Advertiser* (Honolulu) which one would suppose not altogether ignorant of the whereabouts of those wonderful guano deposits in the Pacific, from which Yankee ships draw their prizes.

Guano Islands.—The *Pacific Commercial Advertiser* (Honolulu) of May 12, 1859, which has just come to hand, remarks on an article that appeared in the *New York Tribune* last March, on the subject of the Guano Islands in the Pacific:

"Arthur's, Favorite, and Farmers' islands do not exist. Walker's, Sarah Ann, Samarang, and David's islands, are of doubtful existence, although laid down upon the charts. Flint's, Clarence, Duke of York, Rierson's, and Humphrey's Islands, are all inhabited, and possession of them cannot very well be taken by foreigners. Sydney Island is covered with trees.—Christmas and Caroline islands are partly covered with cocoa-nuts, and are known not to possess guano. There may be guano on many of the other islands claimed, but the best deposits will probably be found to exist on small rocky islands, as yet perhaps undiscovered."—*Ex.*

"WHAT PUT US IN THE REAR."

While we have been fiercely contesting in regard to territory which we never saw, and never expect to see, either we or our posterity, the territory of our farms has been stealing away down the branches, creeks and rivers, to the great deep. It has been the curse of that gallant old State, South Carolina, that she has been taking care of the Nation, to the neglect of her own soil. It has placed her in the rear, when she ought to have been in the advance."

The above extract is from a long bill of complaints, filed against the government of Georgia, by one of the editors of the *Southern Cultivator*, for her neglect of the great interests of agriculture.

It is a very easy matter to write philippics, and to find faults with one's neighbors, but not always very easy to demonstrate cause and effect. The writer has shot wide of the mark—"that gallant old State" has only been trying to take care of herself. She has only been striving to stay the hand of Federal encroachment—to protect the agricultural interests of the South from imposts, and the agricultural domain of the South from appropriation by the enemies of our institutions; and it would have been a very easy matter to have done it, if she had been backed by her sisters, who certainly had as deep an interest at stake as she had. South Carolina has asked nothing from the "Nation" but justice, and to be let alone. She has contended only for her rights, not because it would put money in her purse, but upon the principle of "millions for defence, but not a cent for tri-

bute." If she had been successful, unlimited praise would have been bestowed upon her. She failed, and as in all failures, the failure only is remembered.

It comes with a very bad grace from a Georgian, to be twitting South Carolina for meddling too much with politics. If all the excitement of the last twenty years of political life in South Carolina could be condensed into one canvass, it would not amount to the hubbub made in one Governor's election in Georgia. Nor are we aware of the fact, that we have wasted our patrimony much more rapidly than Georgia. From the complaints of the writer against her Legislature, one would conclude that they were not very far in advance of the rear guard.

We are not sensible of the fact that South Carolina has *ceteris paribus* fallen in the rear of her older Southern sisters in agricultural improvement, in educational progress, in manufacturing enterprise, or internal improvement. South Carolina was the first State in the Union to charter an Agricultural Society, one of the first to inaugurate mineralogical and agricultural surveys, the first to introduce railroads, and one of the first to essay manufacturing.

South Carolina has always maintained a good credit abroad, her banking system has never been reproached with a failure, her people have generally stood firm in the financial shocks, she has never repudiated a dollar, and a South Carolina bank bill will pass current from Maine to Minnesota. This don't look like taking care of the nation has entirely bankrupted her.

What is her agricultural condition now? She has a mineralogical and geological survey going on under an accomplished mineralogist. She has a flourishing State Agricultural Society, liberally endowed by the State, which is diffusing light and infusing energy throughout the country. She has several flourishing factories, good flour-mills, and although by no means occupying the position we would like to see her, we are not willing to acknowledge that she is altogether in the rear. We can say, too, that we have finer orchards of choice fruits, and greater varieties—and that many of the old fields, long ago worn out, have been reclaimed, and are making good crops of cotton. Land has increased in value from 100 to 500 per cent, over the whole State. We produce more wheat than we used to, and more cotton. We have more sheep, and better cattle, mules and horses.

Our increase in population has been too little, but it is owing to the inexorable laws of demand and supply. When the demand for land exceeds the supply, those who are not able to buy must move off in search of a cheaper country. The gradual absorption of the small farms by the more wealthy planters, has been going on, and will go steadily, until the price of land reaches its maximum. We are but obeying our "manifest destiny," following the Normandic proclivity of the Anglo-Saxon American. The young swarms will leave the old hive to seek for better quarters and richer pastures.

You may preach homilies about home and its associations, its old oaks and gum springs, gurgling brooks and peach orchards, to a young couple just beginning life, until your tongue is dry—*cui bono?* When a man thinks of the expense of keeping up a family in this fast age, of the outfit necessary for his boys and girls, of his family equipage, the expenses of educating and finishing off of his hopefuls, will he hesitate choosing between virgin soil at $10 or $15 per acre, to yield per hand his 10 bales of cotton, and old worn out hills at the same price, to be reclaimed at a greater outlay? No—it is not in the spirit of the present age to hesitate—he plunges into the Arkansas or Mississippi bottoms, and pitches in to make a fortune. And it is the thirst for fortune, to count his bales by the hundred, that has depopulated and will depopulate the old States. No one is content, now-a-days, with a competency—everybody wants to be rich. Society is but too rapidly drifting to that condition which recognizes *wealth* as respectability.

It is sheer nonsense to talk about Legislating to arrest emigration. All a State can do is, to tax her people as lightly as possible, to make her laws just and efficient, to educate her people, to develope her resources by agricultural and geological surveys, to construct railroads for the transportation of her produce, and to force them to carry manures for a merely nominal price, to encourage the growth of Agricultural Societies, and the association of agriculturists, and diffusion of useful information amongst her people.

To confess the truth, we have very little faith in purely agricultural colleges and experimental farms. We think that every college should have an agricultural professorship, where the leading principles of agriculture, vegetable physiology, botany, meteorology and chemistry, as applied to agriculture, natural philosophy, as applied to mechanics, &c., should be taught—but as for experimental schools and experimental farms we have no faith in them.

Every man of common observation knows that he has on his own farm, different varieties of soil, that require different treatment. What good could he derive from experiments conducted upon a soil different from his own?

In fact, it is admitted now, by some of the best and most experienced agricultural chemists in the Union, that soil analysis has failed to do any good—that it has not shed the light upon the subject of agricul-

ture, which was claimed for it—"that honest or trustworthy information cannot be afforded by the examination of soils. Chemical analysis may detect the presence of noxious mineral or organic matter, or the absence of one ingredient in large amount, but it can do little more—its results are merely negative, and, by leading the farmer to trust in the chemical constitution of the soil, it deceives him; and hence this great truth, that 'the improvement of soils is mainly effected by physical means,' is too much distrusted or forgotten." This is the deliberate conclusion of a gentleman who has been engaged in soil analysis for twenty years, and has analyzed about 2,000 specimens from all parts of the country.

We can convict many of the best agricultural chemists of blunders and inconsistencies, of advocating to-day opinions diametrically opposite to those of yesterday. Nothing has done so much to retard agricultural education as the uncertainty evolved by these new-light chemico agricultural philosophers. Establish experimental colleges over the whole country—fill them with visionary empiricks, as would surely be the case, for professors, and in five years, you will have such an array of nonsensical and irreconcileable dogmas enunciated, with all the pomp of cabalistic diagrams, embellished by such emblems as $XO=28+CO=22$ or $KO\ SO_3+AL\ O.\ SO_3+HO=$ Humbug, that the practical sense of the country will not recover from it in a century.

Let us take it easy—we can accomplish as much as we can secure by it. We believe the darkest hour in agriculture has passed, and the "day has broke."

For the Farmer and Planter.

THE MINING MAGAZINE.

Mr. Editor:—Permit me, through the pages of the *Farmer and Planter*, to call attention to this new publication. I say *new*, notwithstanding that a journal with that title has long been known to those in our country, who are directly interested in the mineral resources; and I do so because it now appears in a new form, and with new and important features. Wm. P. Blake, Esq., well known as the author of a magnificent quarto "Report on the Geological Reconnaisance of California," will conduct the editorial department of the *Mining Magazine*, in its new series. Mr. Blake informs me, in a private communication, that he desires to convert the *Mining Magazine*, in part at least, into a geological journal. It will thus combine the features of technological and scientific periodical—indeed, it will occupy precisely the same ground as the famous French *Annales des Mines*.—This is a most important feature, and well worthy of all encouragement, inasmuch as it will serve to throw light upon various matters of the highest interest and pecuniary value, in reference to economic pursuits. Mining, geology, metallurgy, and cognate subjects, will necessarily form its leading topics, but others will also be presented, just as in the French publication.

In our country, where mining is destined, before long, to become a leading source of wealth, every vehicle of knowledge must receive our hearty approbation, which is likely to extend sound information into all ranks. The five dollars subscription will no doubt save hundreds and even thousands to many individual subscribers, by giving them that light which they need, in their respective researches.

Mr. Blake's prominent distinction as a scientific man, will be a sufficient guarantee for the soundness of his editorial articles, and for the responsible character of contributions.

The *Mining Magazine* also furnishes financial and statistical information in regard to mines. That this is highly desireable, is clear. Being published in New York, it will be able to afford light upon all topics connected with the state of the market in its particular department, with increased facility. The new series will probably commence with the November or December number, and I would beg to bespeak for it the support of those interested in the industrial welfare of the country, for while we justly decry the monthly picture-books sent to us from that part of the country, or the political organs of a sectional party unexpectedly scattered among us, under the guise of a literary periodical, we are certainly justified in offering a cordial greeting to sound, substantial and instructive publications, whose very nature precludes obnoxious doctrines. Mr. Blake desires this magazine to possess entirely national features; let us then second him in his laudable endeavors.

Respectfully yours,

Columbia, October, 1859. O. M. L.

For the Farmer and Planter.

"FORMATION OF DEW"---"AIKEN" vs. "PENDLETON."

Mr. Editor:—In looking back over the numbers of the *Farmer and Planter*, my eye was arrested by the above caption to an article, found in the October issue for 1858. Your correspondent, "Aiken," in that number, with a very commendable spirit, reviews the theory of the formation of dew, proposed by "Pendleton;" and "Aiken's" evident love for the "deductions of science," induces the belief that he will cheerfully receive the correction of an error, into which he has himself fallen, whilst attempting to correct the errors of others.

For the convenience of reference, I will give the following quotation, which contains the substance of the error in question: "During the day, the earth, receiving more heat from the sun than is lost by radiation, becomes warmer—the surrounding atmos-

phere receives a large portion of this heat, and is thus enabled to *take up* more vapor. It has its *capacity for holding* invisible vapor increased."

From this quotation it would seem that "Aiken" is not aware of the fact that the "deductions of science" have long since discarded all faith in the atmosphere being able to "take up" vapor at all, or in its having any "capacity for holding" it whatever.

This error, we regret to say, is not peculiar to this particular correspondent, but is common to three-fourths of the agricultural writers of the day. They do not seem to know that, so far from the atmosphere *taking up* vapor, it rather *holds it down*, for vapor will rise much faster in a vacuum than when the air is present. And as to its *capacity for holding* vapor, the laws of gaseous diffusion show that all gasses mix on a perfect equality, and neither *holds* the other.

A vacuum will hold, when saturated, as much invisible vapor, and no more and no less, than that same space will, when it is previously filled with atmospheric air. The presence of air does not affect the quantity of vapor any given space will contain.

I have deemed it the more necessary to draw attention to this point, because of the great importance of properly understanding everything, in any way relating to the moisture in our atmosphere, upon which the success of farming operations so largely depends; and, because of the very general prevalence of erroneous notions upon the subject.

Hoping that this note may awaken inquiry upon a subject so vitally interesting to every intelligent farmer, I remain,

Respectfully, B.

For the Farmer and Planter.

HOGS.

Mr. Editor:—Quite a discussion has been going on, in some of the Southern Agricultural journals, upon the merits of the different breeds of Hogs now being puffed by their respective fanciers. One protests that there is no animal equal to the Suffolk; another declares the Essex to be the *sine quo non;* another condemns Suffolk and Essex, and comes out for the Chester County—and so the story goes.

Everybody who lived through the Berkshire, Grazier, and Woburn mania, can very easily understand the matter, and predict the end of it—a set of new names for the hogs, and a set of new converts to Hogdom.

But, as all crosses of better breeds upon inferior ones are a decided improvement, the profits have exceeded the outlay, and the country has, doubtless, a much better stock to begin upon than the old Razor-back or Land-pike of former days. After all, the fault has been not more in the breed, perhaps, than the breeder. We have expected not only too much, but expected to realize it too soon. We have been wanting in patience as well as in judgment.

The proper policy would seem to be, to select a thrifty animal of some breed remarkable for stamping its peculiarities upon its offspring. Select the best sows which breed like for like, and so on. Always in crossing select a Boar of superior qualities, and pure blood; he will be more apt to propagate his own qualities. Never cross from the half-blood Boars, for you do not know where you may run back to.

It is a very easy matter to get a good grazing hog, if you will supply good grass pastures; and unless you can do it, it is next to impossible to raise hogs economically. Barley patches during the Winter and Spring, the harvest gleanings in Summer, the sorghum in Autumn, the pindar and the pea crops, the persimmon and the acorn, should all be brought into play, and keep the hogs out of the corn-crib as long as possible. It may do very well to *write* about putting up a pig, and making him grow a pound a day for 365 days, as the best economy; but the people never will do it as long as "Cotton is King," and there is no use in talking of such nonsence in this latitude. S.

From the Valley Farmer.

TAKING AGRICULTURAL PAPERS.

Last Spring I loaned an agricultural paper to a neighbor, in order that he might look it over, and, if he liked it, become a subscriber. I saw him about three weeks afterwards, and after some preliminaries he remarked, that he had lived to be fifty-three years old, and had just learned something about hogs which he never knew before. What is that? I asked. Well, said he, your paper tells of a disease, caused by two small black teeth coming in the upper jaw, close by the tushes. It said that the hog would *cough*, the *hair become rough and scruffy*, *scour* a little while, and then die. One of mine was described *pint blank*. I looked in his mouth, found the teeth, then examined two or three others, and found that they had *not* got them. I then proceeded according to directions, to pull out the black teeth, and the hog has got as well as ever. I thought to myself he would surely take the paper, but, upon putting this question, the reply was, that times were very hard; he had so little time to read; his eyes were bad, &c. I then asked if he thought the article above alluded to had been the means of saving his hog. Yes, he believed it had. Well, then, said I, the hog was worth at least $2.00, and the subscription to the paper only $1.00, and if one article saved you $2.00, it would certainly pay. The argument was in vain. I went home and found two of my own hogs affected in the same way, used the remedy, and it is probable that three hogs were saved by one article in my paper.

* * * *

Apropos to the above, we once induced a neighbor of ours to take the *Southern Cultivator*. In fact, a friend proposed to pay for it, if we would order it.—

We did so. He was one of your anti-book men, out and out, a slip-shod, cut-down and wear-out fellow, who never had a screw covered, a house finished, a sprout cut, or anything finished, because he was "always on a strain," as he expressed it. He would rise by three in the morning, shout, halloo all hands out, have one running away to a field a mile off, for a plow, another in another direction for a hoe, another hunting for an axe, and two or three after the horses that had got out—and after fizzing and fuming over his bad luck, everything always against him, he would get to work an hour by sun.

Well, neighbor Goggin took the paper a whole year—said "he was mightily pleased with it—our receipt for swinney, which had cured his big cream, was worth the price of the paper."

We felt delighted at his conversion, and observed, Well, will we order it again, eh?

Answer—"Well, I don't reckon its worth while—I see the fellow follows up pretty much my way of doing, anyhow, and I don't think I could learn much from him."

For the Farmer and Planter.

THE STEAM-PLOW vs. THE GUNPOWDER PLOT.

"The Steam-plows at Chicago:—We learn today that Fawkes' Steam-plow came off victorious at Chicago, receiving the Gold Medal of the U. S. Agricultural Society, and the $3,000 offered by the Illinois State Agricultural Society, and the Illinois Central Railroad Company."

Mr. Editor:—The whole West is now in a furor of admiration over the performances of the Steam-plow which the Committee of judges, at the late United States Fair, at Chicago, awarded the premium to, and reported that the expense of plowing an acre would not exceed 64½ cents. It is reported to go up and down hill, and over gullies; besides this, it carries the *power* along to thresh out your grain, grind it up, and saw up your timber *ad libitum*.

We are very much afraid that our friend who, not long since, suggested the idea of subsoiling by gunpowder, will be distanced by this new Guy Fawkes. We advise him to be on the alert, and would suggest that he should try to attach a gunpowder or fulminating fuse to a mole-plow, and run the thing into the ground, up to the handle. As they say in Kentucky, tell him to fire up.

AMINADAB.

To Destroy Bugs.—Bugs cannot stand hot alum water. Take two pounds of alum, bruise it and reduce it nearly to powder; dissolve it in three quarts of boiling water, letting it remain in a warm place till the alum is dissolved. The alum is to be applied hot, by means of a brush, to every joint and crevice. Brush the crevices in the floor of the skirting board if they are suspected places. Whitewash the ceiling, putting in plenty of alum, and there will be an end to their dropping from thence.

COTTON IN ENGLAND.

Cotton, as a raw material, admits of being wrought into garments for the poor at the low sum of twelve cents per pound weight; whilst a single pound of long staple cotton, worth eighty-five cents, can be made to furnish employment and wages to the extent of one thousand dollars for the rich. The material for a full dress of outer garments, if composed of wool, would cost not less than eight dollars, whilst the same quantity of material for cotton, and of more durable quality, would be two dollars to two dollars-and-a-half. The laborer's wife may purchase a neat and good cotton for eight cents per yard, making a dress for fifty-six cents.

The cheapness and utility of cotton have commanded for it a preference which is almost universal, not only for decorations and clothing, but for bookbinding, as a substitute for leather, and for other purposes. The waste cotton, made during the process of manufacture, is wrought into coarse sheets and bed-covers, which are sold at from twelve to eighteen cents per pound. The residue of the waste is used for the manufacture of paper, the cleaner portion being for writing paper, and the sweepings from the floors of factories supply a large proportion of the paper mills of Lancashire with the raw material of the paper which is used for printing books and newspapers.

An advance of one English penny in the price of cotton, amounts to twenty millions of dollars a year. The present stock in Liverpool is only equal to the consumption of three weeks. That from Africa, last year, would run the entire English mills just *one hour!* The entire failure of a cotton crop would entirely destroy, and, perhaps forever, all the manufacturing prosperity England possesses; a reduction of the crop from three to one million of bales, would reduce the manufacturing and trading classes to irretrievable ruin; millions would be deprived of food, and, as a consequence, Great Britain would be involved in a series of calamities, politically, socially and commercially, such as cannot be contemplated without dismay.

In view of this state of things the manufacturers have formed themselves into a Cotton Supply Association, for the purpose of diffusing information on any new point for the culture of cotton. But they have already ascertained that obstacles exist, local or political, which would render it inexpedient to raise the necessary capital for an investment; they are looking eagerly, anxiously, to Africa and India; in the former there can be no hopes for immediate results. The remodification of the Government of India may possibly produce a change, and great efforts will now be made to do something practical in the way of European settlers, tenure of land, improved modes of transit, and bounties for encouragement.—*Horticulturist.*

Lime in Transplanting Trees.—An English publication says that a large plantation of trees has been formed in that country, within a few years past, without the loss of a single tree, by putting a small quantity of lime in the hole when planting the tree. Four bushels of lime are said to be sufficient for an acre. The lime is thoroughly mixed with the soil, in order that it may be reached by the roots, with equal facility in every direction, as its principal effect is to push forward the tree during the first precarious stages of its growth.

Horticultural and Pomological.

WILLIAM SUMMER, EDITOR.

For the Farmer and Planter.

PRIZE ESSAY ON POMOLOGY.

BY WILLIAM SUMMER, POMARIA, S. C.

To which was awarded the Premium at the Annual Meeting of the State Agricultural Society of South Carolina, in 1858.

(CONCLUDED.)

THE PEAR.

The Pear in its original state was astringent and useless for the desert; but, by gradual improvement, it is now rich and delicious, and, when grown in perfection, it is eminently distinguished for its great delicacy, its melting and exquisite flavor. Greatly excelling the apple in these particulars, it will be more generally adapted to all portions of our State. It will succeed in any ordinary good soil, provided the subsoil is dry, and does not retain too much moisture. In such locations it is subject to blight, and, in extreme sandy soils, when the trees are attacked, no remedies will restore them to a luxuriant condition.

The Pear succeeds admirably, as a standard, upon the rich clay soils of the upper districts of this State. These soils abound in iron impregnations, and fine specimens, on such locations, have been grown, both of the largest size and the best flavor. We have seen trees of great size, planted at the first settlement of the country, by our ancestors, who were careful to bring over some seed of the varieties which they obtained in the Fatherland. Many of these have proven good varieties: but the Pear culture was even then in its infancy, and it was left with Prof. Van Mons, of Belgium, to develope, by his experiments, the hundreds of new varieties which were produced by crossing the different kinds. He produced many sorts which will go down to posterity, associated with his name. Some of these, which have been fruited in England and at the North, have been rejected, as the shortness of the season prevented their ripening, and, when fruited here, have proven the best varieties for us. From the experience which we have had with Dwarf Pears, we are more favourably impressed with their complete success than ever. Dr. A. Hasel, of Georgetown, S. C., informs us that there are pear trees upon the quince, in that neighborhood, which are at least forty years old, and still in full vigor and constant bearing. Mr. Robert Chisolm has for many years produced heavy crops of Pears, in the vicinity of Beaufort. The Angors and Paris quinces, upon which they should alone be propagated, grows here with great vigor; and, from this fact, many choice varieties can be propagated, as dwarfs that do not succeed in colder climates, grown thus, require but little space, from 8 to 10 ft. being sufficient, producing fruit in two or three years after planting, and are better adapted to sandy soils than standard trees. They should be trained as pyramids, branching within twelve inches of the ground, thinning out the branches and shortening their growth one half annually—taking care to preserve a leading shoot, which, though cut back, should always be done with a view to keeping and forming the tree into a regular pyramid—until they arrive at a bearing state, when they will require comparatively little pruning. Their particular adaptation to our climate, and early bearing, should give them a place in every fruit garden.

Good, thorough culture, and moderate manuring are necessary. From experiments, it has been ascertained that iron is a good element for the Pear, and, as it requires but a small quantity, it is readily obtained: as the refuse from blacksmiths' shops, from machine-shops, and foundries, may be used when this ingredient is wanting in the soil. The land should be well cultivated, among Pear trees, in some root or pea crop, and the manure used should be such as to give a moderate growth. Stable manure, composted with peat or vegetable mould, is excellent for Dwarf Pears. Beside this, use lime, ashes, salt, gypsum, for high lands, whilst charcoal, and a few coal ashes, when they can be obtained, are particularly beneficial to wet soils. Bone manure, soap suds and sweepings from the poultry-house, will all be found valuable, when incorporated into the compost-heap. The most formidable difficulty in the cultivation of the Pear is the *blight*, known by the various names of the *fire-blight*, and *frozen-sap blight*, and *insect-blight*. The causes may be various, but the appearance is the same—a sudden withering or turning black of the leaves, on a portion of the limbs, during rapid growth, and often while the rest of the tree remains apparently in full vigor. The disease extends downwards, unless naturally or artificially checked, until the whole tree is destroyed. The causes have been closely investigated for years, by the *most* skilful cultivators, but, still, a satisfactory explanation, applicable to all cases, has not been made. The earlier theory was, that the hot rays of the sun produced the disaster—hence the original name "*fire blight*." It was subsequently alleged that a small insect (*scolytus pyri*), by the infusion of poison, caused the death of the branches. More recently the "*frozen sap*" theory has been extensively adopted. The explanation of this theory is as follows:—A damp and warm Au-

tumn causes a late, unripened growth of wood, not able to withstand the effects of Winter. It is acted upon by severe frosts, as was the case last Spring, which brought on a sudden blight in the pear-trees throughout the country. While this form of disease in the decomposition of the sap by which it becomes poisonous in its nature, and by passing downwards through the bark is destructive to the tree; it still does not spread in its ravages like that of "*insect blight.*" However various the causes there seems but one remedy, and its progress must be arrested by the immediate excision of the dead branches. The remedy, to be effectual, must be promptly and fearlessly applied. Many cultivators, through fear, do not cut far enough below the diseased portion, and leave the seeds of death remaining still within the tree.—Others delay the application for a number of days, until the case is hopeless. In ordinary cases entire success will follow immediate excision.

We have many choice varieties of the Pear which have been introduced from Europe, and every year some excellent native varieties are brought into notice by amateurs. We may confidently expect in a few years to be supplied with such native kinds as will, within our latitude, carry the season of this delicious and wholesome fruit even into the Spring.—We here only enumerate by name some of the principal kinds fruited and proven to be adapted to our climate.

Madeline, Upper-Crust, Julienne, Bloodgood, Jargonelle, Dearbon's Seedling, Rostezier, Summer, Franc, Real Bartlet, Audrews, Buffum, Burns, Bosc, Burre Brown, B. Aremberg, B. Easter, B. Golden, B. Diel, B. Oswego, Brandywine, Charles of Austria, Doyenne White, Doyenne Grey, Delices Jodoigne, Duchesse d' Angouleme, Dix, Flemish Beauty, Glout Morceau, Lawrence, Moor's Pound, Niles, Philadelphia, Seekel, Steven's Genesee, Vicar of Winckfield, Winter Bon Cretien, St. Ghislain, Urbaniste, Winter Nelis, Washington, Louise Bon de Jersey, Novo Simon Bovier, Ott, Jaminette, Doyenne Alencon, Doyenne Downing, and others, which will be described in the Appendix.

THE PEACH

Is so generally cultivated that it would seem almost useless to urge its claims upon the attention of our people. All are aware of its usefulness, though it is too often propagated from the seed alone, by which means entire orchards are planted of comparatively worthless varieties. The best varieties only should be cultivated. These should be carefully budded, and a succession of fruit, from the Early Nutmeg, Early Ann and Early Tillotson, until the ripening of Scott's October, can be obtained. A new impetus has been given by the successful growing of the early varieties for the Northern markets, by the example o l Gregg, of Graniteville. When it is considered that our people have one month to supply the Northern markets with this fruit, or until the 1st of August, before their peaches can be ripened, that many thousands of bushels are required daily for the New York market alone, it will at once be seen that no fears need be entertained that an over-supply will be produced. Within the latitude of our State lies the proper limit for producing this delicious and wholesome fruit, in its greatest perfection, and as it promises to be so remunerative, the best early varieties should be cultivated extensively, to supply this increasing demand. For this purpose we would recommend Fay's Early Ann, Early Tillotson, Pierce's Early, Early York, Tice's Early, Summer's Early, Early Admirable, Amelia, Acton Scott, Crawford's Early, Crawford's Late, Chevreuse Hatif, Coe's Early, Troth's Early Red, Honest John, George Fourth, Red Rareripe, Yellow Alberge. These will bring in the regular peach season at the North, when it is not expected that we could compete with those who can supply the markets at home. Until within a few years past there was so much indifference to the cultivation of the peach that quite a deficiency of choice varieties were found to supply the season after the Heath Cling; but lately superior September and October varieties have been produced, keeping up a succession until frost. Among these, in South Carolina, may be mentioned Glennore Cling, Atwood's Late Cling, Epting's Cling, September Free, Chaplin's Late Red, and Chaplin's Green Cling—this last ripening as late as the 10th October, and even at this season it has all the delicious and exquisite flavor of the finest peach of mid-summer.

The Peach tree requires to be shortened in by cutting back the annual growth one-half. When trained by branching low, and with regular, well-formed heads, the fruit is much better, and the trees can better sustain their heavy crops of fruit, and are more durable.

The principal enemy which the Peach, in our climate, has to contend with, is the borer (*Egeria exitiosa*). It cuts its way into the bark just below the surface, and frequently kills the tree. It can be destroyed by scraping away the earth from around the tree, and following the worm to the end of the hole with a knife. But to destroy them effectually, pour hot water in the holes around the tree. Those which have escaped the eye will be thus destroyed. An orchard thus examined in early Spring, and in Summer, few will escape. An easy and effectual method of counteracting the injurious depredations of the *Egeria exitiosa*, is, to make hillocks of ashes about the stem of the tree in April. The eggs of the fly are deposited at the surface. In the Fall spread the

ashes about the roots of the tree; the eggs thus perish, and the tree receives great benefit from the scattered ashes. As a simple preventive, the hillock may be made of earth, or saw-dust, or sheathing of hardware paper—twelve or fourteen inches may be tied around the stem of the tree, to prevent the deposit of the eggs, but in either case it must be removed in Autumn. This precaution will, if pursued regularly, keep the trees healthy and thrifty.

The fruit is sometimes subject to worms, which more particularly infest the trees grown in gardens. The only remedy in this instance is, to pick up daily all the waste fruit that falls. In the Orchard, give swine the range to pick up the waste fruit, and for this purpose cultivate in some crop that can be fed off by them, and occasionally by sowing down in Oats, which must be eaten off green, early in Spring: the drippings of the animals making up fully for the crop taken off.

The Nectarine is a variety of the peach, and requires the same training and general treatment.

THE PLUM, APRICOT AND NECTARINE.

These being thin skinned fruits, are subject to the attacks of curculio. As yet no certain remedy has been found to prevent their destructive ravages, but if planted about yards, and in clay soils, where the ground is hard and tramped, or where pigs and poultry can pick up the waste fruit, they will often produce abundant crops. It is hoped that the remedy which has been suggested, of planting these fruits on a location surrounded by water, thus preventing the ascension of the curculio, will entirely protect them. A location of this kind is not, however, within the reach of all who wish to cultivate these delicious fruits. The culture of plums, for the preparation of prunes, is an object worthy of the attention of our people. There are several varieties, such as St. Catharine's, Dutch or German Prune, Domine Dull, Inckworth Imperatrice, Fellemberg, &c., from which the best prunes are made, equal to those imported. The German process, simple and easy, is, to heat them in a brick oven, at first barely wilting them, then heat them several times in a moderately hot oven, taking care not to scorch them.—They are pressed into shape each time as they are taken out, and regularly turned on the boards.

The ordinary varieties, such as the Damsons, are dried in the same manner, and are valuable for cooking, for making tarts, when stewed, being wholesome and nutritious. The Plum requires abundant food in the soil to bring it to perfection; and where a plentiful supply of animal manure has been given, salt will be found highly beneficial. This should be spread as far as the roots extend, until the surface is white. Ashes, in soils devoid of lime, will be necessary. From a bushel to a bushel and a-half, to a bearing tree, is the proper quantity. This application serves also to prevent the *leaf blight* or premature casting of foliage, which proves, in some seasons, a serious disaster to the plum, and prevents the ripening of the fruit.

QUINCES.

The Quince is of easy culture, but requires to be grown in rich, deep soil, to produce large, fair fruit. The principal varieties are the Orange, Portugal, Rheas, Angors, Paris, Seedling. The Paris, or Fontenay, and Portugal, ripen later, and are excellent varieties for preserving and baking. A few trees neatly trained and trimmed, should be grown at least in every garden. As a remunerative crop for market, it is worthy of general culture, the fruit always commaading a ready sale in our cities and towns, at good prices. Barn-yard manure, with salt in abundance, mixed a few months before it is applied, and spaded in around the tree, will render trees fruitful, and the fruit of the best quality. New plantations te be made in old worn-out soils, should have a liberal dressing of virgin earth, or leaf-mould from the woods. Ashes will at all times be beneficial in producing good, sound fruit, and prevent, in a great measure, the rot to which it is so subject. The trees should be mulched about the roots to preserve a moist temperature.

THE FIG.

The Fig also deserves our attention. It is of easy culture and propagative, and there are now many choice varieties. The Brown Turkey, the Red Turkey, and the Celeste, are hardy varieties, and are the best for general culture. The White Nerci, the Alicant, and the Havana, are not so hardy, and only succeed well south of 35°; but, with a little protection, and the advantage of shelter, they can be acclimated within the entire latitude of our State.—They are easily dried, and every family could prepare a supply for their own consumption. The fruit is free from the injury of insects, and from time immemorial "the learned doctors" all agree in recommending it as a wholesome fruit. Give it, therefore, a place in your collection, and encourage your children to eat it, and it will be found beneficial to health.

THE POMEGRANATE

Comes up with the same associations of the fig, and from its fair and lovely fruit, asks for a place where the climate favors its growth, and is an encouraging instance of the successful acclimation amongst us of a tropical fruit. There are several new varieties which promise well.

The Almond produces heavy crops of fruit, and with a little attention its culture could be made profitable.

The Jujube is hardy here, and has produced abundant crops of fruit in Beaufort.

The Spanish Maron Chesnut and the *Madeira Nut*, *or English Walnut*, both thrive well, and there are trees now bearing good crops of fruit. The fruit, when eaten fresh, is wholesome and agreeable to the taste. They could be made valuable, if grown in sufficient quantities to supply our own markets.—The road-sides should be planted with these trees: they would not only be profitable but highly ornamental.

THE STRAWBERRY.

The easy culture and abundant early fruit, coming in as it does with the Spring, makes the Strawberry worthy of a place in every garden. The soil requires to be trenched eighteen or twenty inches, and made rich with vegetable mould, and a compost of well rotted manure and ashes. The soil best adapted to its growth is a sandy loam, but any heavy land may be made suitable, by the addition of sand and vegetable mould. The plants should be set in rows 18 inches apart, and 12 inches in the drill. Plant in October and November in Autumn, and February and March in Spring. The best early varieties are *Longworth's Prolific* and Albany. The Albany or Wilson's Seedling is also a new early variety of the highest promise, producing abundant crops of fine large fruit, which continues productive for several weeks. Tee *Moyamensing* is also a good variety.—*McAvoy's Extra Red* and *McAvoy's Superior* are both estimable varieties, the Superior being in every way worthy of its name.

The *Hovey Seedling* is planted for the principal crop—and with the Early Scarlet or Orange Prolific Staminates as fertilizers, it invariably produces most abundant yields. It succeeds the *Longworth*, and continues in bearing until the early orchard fruits begin to ripen. Should the weather prove dry at the season of flowering, the beds should receive copious waterings. This should be continued as long as necessary, as the fruit is much larger and finer flavored, and the Hovey and Albany, by this aid, may be continued in bearing until the first of July.

THE RASPBERRY

Deserves a place in every garden, and a rich border should be prepared for it, so as to be shaded from the sun after 12 o'clock. The common *Black* and *Orange*, the *Catawissa* and *Ohio or Embearing*, are native varieties, and succeed with a little care, and produce abundant fruit. The *Fastolf* and *Hudson Red Antwerp* are the best of the foreign varieties. *Brinckles Orange* and a seedling variety, produced here by Mr. Frances Bulkeley, of Gadsden, S. C., are both valuable new varieties.

THE GRAPE.

Of the first and greatest importance is the preparation of the soil. This should be thoroughly trenched to the depth of 18 or 20 inches. This may be done with comparatively little labor, for vineyard culture, by the aid of a good turning plow, following in the same furrow with the subsoil plow; after which use the spade the same as in trenching. The soil best adapted to the growth of the grape is that of a sandy or granite character, but almost any soil may be made to grow good crops with proper preparation, provided the subsoil be dry. Wet subsoils are in every instance injurious to the growth of the vine. Within a few years an increased interest has been given to the culture of the vine for making wine, and there are a number of small vineyards in our State which promise the best success. The *Catawba* is the grape principally used for wine making. The *Lenoir* and *Herbemont Madeira*, both of our own State, are excellent varieties, both for table use and wine. The *Scuppernong* is grown extensively in North Carolina for this latter purpose. It gives a wine of a peculiar rich aroma, and when we are properly skilled in the making and preservation of wines, we are persuaded that this peculiar property will add much to its reputation and value. Mr. Longworth, of Cincinatti, gives it, as his opinion, that we can make a superior wine of the Isabella. The Herbemont and Warren being one and the same, make mild wine equal to the best light wines of France, Spain, or Italy, and the best judges can scarcely detect the difference, when properly manufactured and kept.—The Isabella is a vigorous grower and a most productive kind, and at the instance of Dr. Bachman some vines were shortened in, after the fruit had been well set, and a second crop of fine bunches of fruit was the result, ripening in October. The berries of the Isabella are usually plucked too early. They should be permitted to hang until fully ripe, when they will be sweet and delicious. There are several other native varieties of excellence, which promise well, of which we hope to be able to speak more favorable in the future.

The vine should be enriched with ashes and decayed vegetable matter, ground bone dust and scraps of leather, which may be gathered about every town and village in the State, with manure from the poultry yard, all of which are valuable materials, when buried about the roots. From three to four hundred gallons of wine may readily be produced to the acre, from the *Lenoir*, *Catawba*, and *Herbemont*, as they are most abundant bearers. The *Catawba*, though not so sweet as the Isabella, is, still, one of the richest grapes, abounding in glucose: hence its superior qualities as a wine grape. The superior specimens of wine which have been exhibited at our State Ag-

ricultural Fair, are convincing proofs that wine making is no experiment. We will not enter here upon the particular influence which would be exerted by the use of pure wine, as a means of promoting temperance, but we would most earnestly urge its claims as a promoter and preserver of life and health.—Prof. Liebig says, "that as persons become older pure wine is an important addition for preserving and keeping up the vital powers, warming and nourishing the blood, and that it is beneficial in gout and rheumatism, and all diseases of the kidneys." Plant, then, a few vines, as every person can, who has a few feet of ground, and provide your family, at least, with a supply of wholesome and delicious fruit.

The rot is the principal thing to contend with in the culture of grapes. The proper enriching of the vine with bone dust and ashes, and the thorough draining of the subsoil, will all be important aids in effecting this, and when only a few vines are planted they should be protected from the heavy and drenching rains, by making a shelter, with boards on the top of the posts about two feet wide. The cuttings should be grown at first in a trench, at a depth of 8 or 10 inches, and then transplanted in the vineyard. We are persuaded that the practice, as commonly adopted, of planting cuttings 18 or 20 inches deep, is erroneous, and is a source of rot, the roots being forced to be thrown out in a soil too deep and uncongenial. Plant vines at a moderate depth, follow the suggestions of Nature, and if the subsoil is properly prepared the roots will find their way, and penetrate to the required depth.

In conclusion, plant vineyards, beautiful and interesting, about your homesteads, plant orchards, rich with the apple, useful in its fruit, and glowing in its white tinged blossoms; the peach, with its lovely blossoms, warm with the breath of Spring, and delicious in Summer with its abundant fruitage; the apricot, the cherry and nectarines, beautiful in their early offerings; the pear, with its golden, melting fruit, always acceptable to the palate; the plum, with its rich, luscious, and abundant clusters; the fig, wholesome and memorable for its associations.—Bring all these near your houses, and they will invite you to a love of home, and you will have done much to make home cheerful by enjoying these rural blessings and comforts of life.

A NEW FRUIT---THE CHINESE SAND PEAR.

We have just ripened the Chinese Sand Pear, which, in addition to its great beauty, bids fair to be a very useful variety of fruit. It was imported from China, we were informed, and the few specimens which were matured in the North cracked very bad ly. With us it is the most beautiful production afforded by the orchard. In shape, globular, obtuse pyriform; size, large; skin, golden yellow, dotted over regularly with russett specks. When fully ripe its flesh is crispy and tender, with a peculiar sweet flavor, resembling that of the quince. It is an admirable baking and preserving fruit. The tree is very ornamental and vigorous, with large, dark luxuriant foliage, and it grows well, both on the pear and quince stocks. The only drawback is its very early blooming, which frequently causes the failure of the crop. It will, however, be admirably adapted to the more southern regions of our country, where pears do not flourish well. We know nothing of its origin, further than that we received it as imported from China, and its *habital*, as well as novelty of appearance, proves it a "tree celestial."

DEATH OF DR. JOHN P. BARRATT.

Since our last issue, we have heard the melancholy tidings of the death of this devoted friend to horticulture, rural art, and the natural sciences. Dr. Barratt was a native of Great Britain, and emigrating early in life, he selected Abbeville District as a permanent abode; where, in addition to the successful practice of his profession, he soon became conspicuous as a horticulturist and planter.—He loved botanical labours as an enjoyment, and ever devoted to the introduction of new plants, he contributed to choice exotic and desirable native varieties, the fields of the beautiful. Every department of natural science has been enriched by his researches. He was the friend of Audubon, Bachman, Torry, Agassiz, and other eminent savans.—In the pursuit of his favorite studies, he neglected no object which could in any wise aid his co-workers in their researches, and as a contributor of specimens of botany, ornithology, and geology, both to individuals and institutions, was liberal and self-denying. He will not be missed by the scientific world alone, but, the friend and benefactor of all classes, his place will not soon be filled. Dr. Barratt was more generally known by his connection with agricultural progress in South Carolina. He was one of the wise trio who, in 1855, published that appeal to the people on the subject of a State Agricultural Society, which resulted in its formation and permanent endowment. An appreciation of this eminent service was evidenced by the initial convention which called upon him to preside over its deliberations, and he has, ever since the organization of the Society, been one of its honored Vice-Presidents. He lived to see the fruition of his hopes, and blessed with a reliant faith, he is now reaping the reward of the good man who has performed his duty to his fellow men. He rests in Peace. *

A BOTANICAL CHAPTER ON GRAPES.

We take great pleasure in calling the attention of our readers to the subjoined botanical essay on the different varieties of native grapes, furnished by our friend, H. W. Ravenel, Esq., of Aiken, South Carolina. There has been a great obscurity in the nomenclature of the vine, and our own State and Georgia have done much to "*confound confusion*" in this particular. The Lenoir, a grape originating in Sumter District, South Carolina, has been called in Georgia Black July, Thurmond, and Devereaux: in North Carolina, Lincoln, whilst, in our own Sate, it is frequently confounded with the Herbemont. Our father received the Lenoir, more than thirty years ago, from the late Nicholas Herbemont, by its *true name* of Lenoir; and at the same time the Herbemont, by its proper name. The Georgia cultivators gave the latter the name of Warren, but we think. in justice to the pioneer horticulturist and vine-grower of the South, it should bear his honored name. If no one else can make out a better title-deed to its ancestry than we can, we shall insist upon the name of Warren being discarded. The late Maj. Guignard, of Columbia, S. C., often told us, that the Herbemont was introduced into that city as early as 1798, and was propagated from a then old vine, growing on the plantation which recently belonged to the late Judge Huger. Of its origin, Maj. Guignard could tell nothing more, but being intimately acquainted with the neighborhood in which the original vine grew, repeatedly asserted that the above statement was entirely correct. This statement, of course, puts a quietus to the claim which various persons have made as to its paternity.

We will heartily aid Mr. Ravenel in the work of investigation, and have several varieties, not enumerated, which we shall submit to him for classification. We hope that all persons having varieties not enumerated, will send vines or cuttings to him, during the Winter. We congratulate the State on having, not only a correct, but such a working botanist, as Mr. Ravenel, amongst us. and we hope that he will repeatadly favor the public with his investigations.—Ed.

Paper on Grapes, read before the "Aiken Vine-Growing and Horticultural Association," September 15th, 1859, by H. W. Ravenel:

The Grape, like all other domesticated plants long subjected to cultivation, has formed innumerable varieties, differing: First, in *size, flavor, color, and time of ripening its Fruit.* Second, in *shape* and *size* of *leaf.* Third, in general thriftiness and vigor of *growth.* These variations are, however, confined within certain limits; and, through all their varieties, they yet preserve their specific identity, and reveal their parentage and origin.

There are certain bounds within which nature seems to revel in producing changes and combinations of various forms and qualities, but these bounds are never over-stepped.

Species in nature are primordial forms whose characters remain constant through all time, and which are capable of propagating their kind. Within the limits of these specific characters there may be variations in minor points, occurring sometimes in the wild state, but oftener through the effects of the high culture and artificial treatment. Thus, in the United States, we have a certain number of species of wild Grape. According to the best authorities, the number is reduced to *four*, east of the Mississippi. From one or other of these four species are descended *all* our indigenous varieties. Of thess there are now upwards of one hundred in cultivation in the United States, and their number will go on increasing, as seedlings of good qualities are brought into notice. Many of them, no doubt, will prove valuable acquisitions, either for the table or wine-making, but a large number will be thrown aside. There is such a strong temptation to multiply varieties, either as a source of profit to Wine sellers, or as matter of pride to amateur cultivators, that the only corrective for the evil will be a publication, at stated periods, of a list of condemned varieties, as is now done by the United States Pomological Society, in the matter of fruit-trees.

I am not aware of any attempt to classify these indigenous varieties, and trace them to their proper parentage, to one of the four native species; nor, perhaps, has the time arrived yet, when it can properly be done, from the want of general dissemination, and the difficulty of obtaining many of the latest varieties.

I will, however, give an enumeration of our four American species, with the varieties of each, so far as our present information permits:

NATIVE, OR INDIGENOUS GRAPES.

1st. VITIS LABRUSSA LINNÆUS.—*Mx.—Ph.—Ell. sk. Torr. & Gr.—DeCand Prod.*

Fox Grape.—Stem of a pale brown color, the bark more readily exfoliating than in the other species; and the internodes, or joints, rather longer.—Leaves large, 3 to 5 lobed, dark green above; densely tomentose or woolly beneath; the tomentrem whitish or rusty. Bunches not very compact nor shouldered. Berries large, dark blue, with a thickish skin, and always pulpy, with a musky flavor.—From this species are descended the following cultivated varieties, viz:

Isabella or Laspeyne, Mary Isabel, Catawba,

Bland's Madeira, Concord, Diana, Rebecca, To-Kalon, Anna, Hartford Prolific, Ontario, Catawissa, Northern Muscadine, Minor or Venango, Garrigues, Stetson's Seedling, York, Madeira, or Canby's August, Hyde's Eliza, Union Village, Early Chocolate, Early Black, Harvard, Green Prolific, Kilvington, Ives, Charter Oak, Schuylkill or Alexander, Shaker, Sweet Water or Early Muscadine.

2d. Vitis æstivalis Michaux.—*Ph.—Ell. sk.—Torr. & Gr.—DeCand. Prod.*

Summer Grape.—Stem stout, and of a reddish-brown, with the internodes generally shorter than in the preceding. Leaves broadly cordate, 3 to 5 lobed, or sinuately pulmate; when young, downy, with cobwebby hairs beneath; smoothish when old; of a lighter green than the preceding. Bunches shouldered and compact. Berries small, round, black, rather acid, never pulpy. From this species are descended the following:

Warren, (Herbemont) Pauline or Burgundy, Guignard, Clinton, Delaware, Lenoir, (*Black July, Lincoln, Thurmond, Sumpter, Devereux,*) Marion, Treveling, Long Grape or Old House, Elsinborough, Seabrook, King, Ohio or Cigar Box, Missouri, Norton's Virginia.

3d. Vitis cordifolia Michaux.—*Ph.—Torr. & Gr. DeCand, Prod.*

Winter or Frost Grape.—Leaves thin, smaller than the preceding, glabrous on both sides, with broad mucronate teeth. Berries small, nearly black, ripening late, and very tart. There are no varieties of this in cultivation, that I am aware of.

4th Vitis vulpina Linn. (*V. rotundifolia Mx.—Ph. Ell.—Sk.*)

Bullace, Bullet or Bull grape—known in Florida and Texas as "Mustang."

Stem whitish, the wood more compact and close-grained than in the other species. Leaves cordate, shining on both surfaces, somewhat 3 lobed, coarsely toothed, smaller than any of the other species. Berries in loose clusters, scarcely exceeding five or six, changing from reddish brown to black in ripening, with a thick skin and large pulp.

The only cultivated variety is the "Scoupernong," so called after a lake in eastern North Carolina, where it was first discovered. There may be more than one variety in cultivation under this name, as the so called "Scoupernong" has been found in other native localities since.

The *Vitis rupestris Scheele*, is found in Texas, about the Upper Gaudaloupe, near New Braunfells, and is there known as the "Mountain Grape." It is said to have been found also in Arkansas. Prof. Gray, in his description of the plants of Texas, found by Lindheimer, in 184–, says, of this species: "It does not climb, but the stems are upright, and only two or three feet high. The branches are small, and the berries, of the size of peas only, are black, very sweet, and the most grateful as well as the earliest ripened grape of Texas."

The following comprise a list of native cultivated grapes, which I know only by name, not having had access to any means of information by which they may be classified. They are all, most probably, descendants of V. Labrusca, or V. Aestivalis, and some may be synonyms of those already enumerated.

Norton's Seedling, Logan, Rock-house Indian, or Waterloo. Little Ozark, Graham, Miller's Seedling, Burton's, Early August, Sage, Early Amber, Clermont, Jane, Harris, Long, Baldwin's Early, Lonisa, Mary Ann, Clapier, Canada-Chief, Secerd's Sweet-Water, Golden Clinton, Senior, Archer, Monteith, Huber.

These are names of grapes taken from various sources, and mentioned as native or indigenous seedlings. After being better known, and with full opportunities for examination of their fruit, leaves and habit, doubtless we shall be able to classify them, and trace their parentage to one or other of the four American species.

How far the effects of high culture, and the propagation of new seedlings from these improved varieties, may cause them to deviate from their typical state, it is impossible to foresee; but if our Botanists are correct in their limitation of species, these variations must be within the specific characters assigned to species respectively.

There is one prominent character which distinguishes the Grapes of the United States from those of the Eastern Hemisphere, and that is in the *Inflorescence.* All the species of American grapes are *dioecio polygamous*, that is, some of the vines bear staminate or barren flowers only, and are forever sterile. Others bear perfect flowers, and are fruitful.

All the species of the Eastern Hemisphere are *Hermaphrodite*, that is, every vine bears perfect flowers, containing stamen and pistils, in the same corrolla, and are fruitful. In the absence of other evidence, this fact would be conclusive, of the parentage of an unknown seedling, whether it be of exotic or indigenous origin.

FOREIGN GRAPE.

Of the vast number of varieties of the foreign Grapes now in cultivation in Europe and the United States, all are referred to the single species, *Vitis vinifera Linnaeus*, a native of the Southern Parts of Asia.

It has been under cultivation more than a thousand years, and was known under many varieties by the ancients.

Upwards of thirty years ago, when Chaptal was Minister of the Interior, there were fourteen hundred varieties enumerated in the Luxemberg catalogue, obtained from France alone. The Geneva catalogue numbered six hundred. Doubtless they have been much increased since; and as in the propagation of varieties of other fruits by seedlings, there is no limit to the number that may be brought into existence.

DeCandolle, in his "Prodromus," enumerates and gives descriptions of eleven other species of *vine* from the Old World, mostly natives of the south-eastern part of Asia, but none of these have been cultivated extensively. The Grape of Europe is *one species*, but of *numberless varieties.*

Most of the early attempts at Grape culture in this country, were with the foreign Grapes, but all, without exception, have been failures. The foreign Grapes (varieties of *Vitis vinifera*) seem, from their constitution, unfitted to our soil and climate. (I here allude to open air culture—under glass they appear to thrive very well.) How they will succeed when grafted upon the hardy native vine, remains to be proved. Partial experiments made in Florida and in this vicinity, are promising of success.

If the cause of failure is the greater humidity of our climate, grafting on the wild vine will scarcely prove a corrective, as the leaf and fruit are still exposed to the atmospheric influence. If the cause proceeds from uncongeniality of soil, then grafting upon the wild stock will most probably be successful. As this mode of increasing a vineyard for wine-making must necessarily be more tedious and expensive than by cuttings, it is our policy, as well as true philosophy, to endeavor, by the raising of seedlings, to obtain varieties best suited to our soil and climate.

Every encouragement should be given for the accomplishment of this end, and our Association has consulted the true interest of all vine-growers in offering handsome premiums towards that object.

For the Farmer and Planter.

FIVE DOLLARS WORTH OF GRAPE-VINES, AND A FIG.

The grape was one of the first fruits cultivated by man. It received especial care and attention in patriarchal times, before orchards or collections of other fruits were grown or probably known.—Scarcely any fruit will commence to bear in less time, yield more abundantly, or surpass it in flavor for delicacy and richness. It is also easily converted into a delightful and healthy beverage.

If every family made some wine the tendency would be to abandon the use of spirituous liquors, and cases of drunkenness would seldom be heard of in the land. A few vines would yield a sufficient supply for family use, and, if properly selected, would remain in fruit for several months in the year. The propagation is not difficult, as the cuttings root freely. Branches of the previous or current year's wood, bent down and covered with earth in the Summer, will strike root and bear the second year, if not the next season.

For *five* dollars Mr. William Summer, of Pomaria, or any other good nursery-man, would furnish a lot of well rooted vines, which would soon commence bearing, and ripen in succession throughout the Summer. From the annual trimmings of these vines plant cuttings, or make layers as above directed, and by industry you may increase the stock to keep pace with the increased desire for the fruit. You should have at least one vine of the scuppernong, and remember that it will only grow from layers.

Vines, if properly cared for, live to a great age.—There are said to be some in Burgundy more than four hundred years old, and Pliny gives an account of a vine six hundred years old. To fully develope the grape and grow it to the greatest perfection, the soil should be dry and warm, light, deep and rich. Soap-suds from the wash, and any old rubbish of lime, will be of service around the vines.

We cannot appreciate the enjoyment of good fruit by the want of it. No article of diet is more conducive to health and pleasure than fruit—but I am writing of the grape in particular, and not of fruit in general. When I see some thrifty grape-vines in the garden or orchard, and around the yard, I always note it down that that man or family has some taste for the ornamental and the useful.

To amass wealth should not be the chief object of our life, but the worship of the *dollar* prevents many a comfort.

Let us enjoy some of the good things—some of the sweets and luxuries which make home pleasant and life desirable. Some luscious grapes and a little wine of your own make would not be very objectionable—try a time to cheer the heart of man.

Figs will grow from cuttings, (which can be procured in almost any neighborhood), require but little care and attention, and bear abundantly. If you are not fond of them now you may become so hereafter, and rest assured the children will relish them.

Old bachelors might plant some grape-vines and fig-bushes, as a mess of delicious grapes and figs would make a handsome treat for little nephews and nieces, and neighbor's children, when they come to pay a visit.

Nursery-men or gardeners about Columbia, having grape-vines or kindred commodities for sale, would do well to advertise in the *Farmer and Planter*. It is generally filed away and taken care of, and is convenient for reference, and besides, many of its readers have a fondness for the cultivation of fruits, and would therefore appreciate the notice.

AMATEUR.